PAPER TRADE JOURNAL

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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It is the Cutting
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JUNE
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1938

Vol. CVI
No. 22

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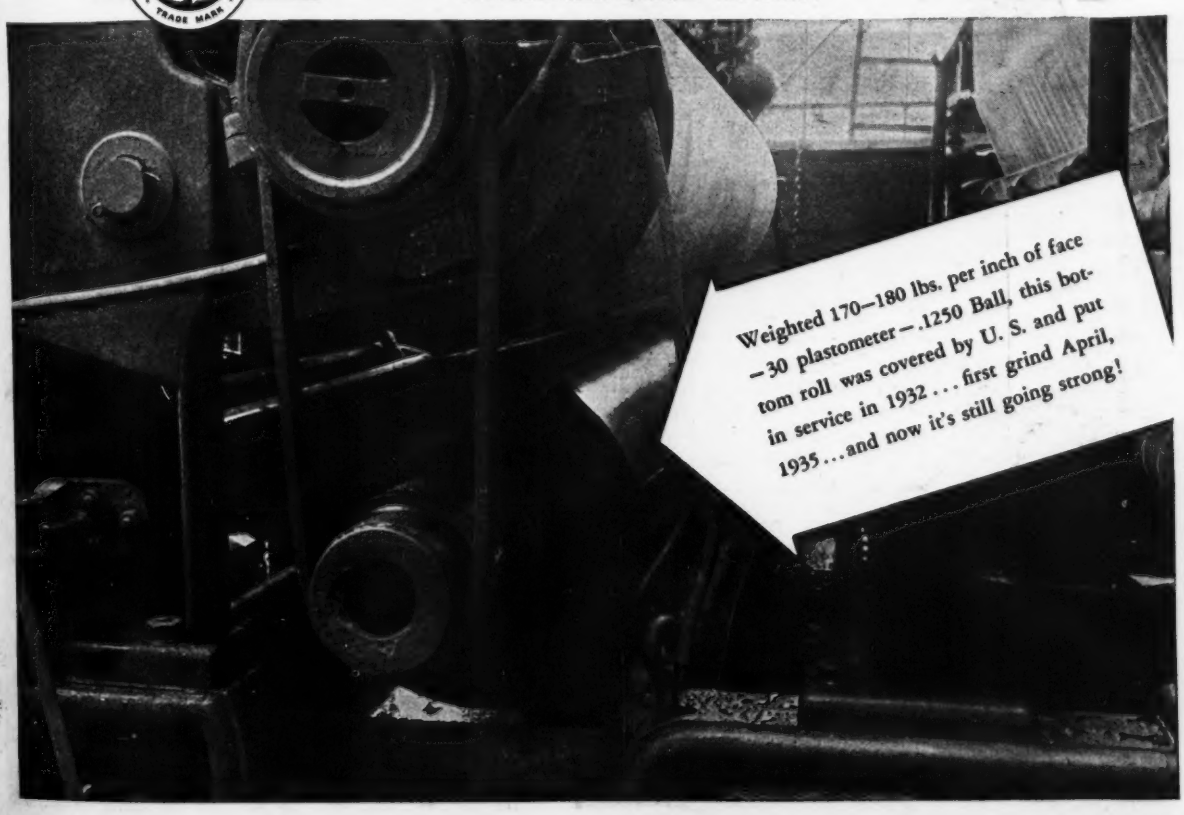
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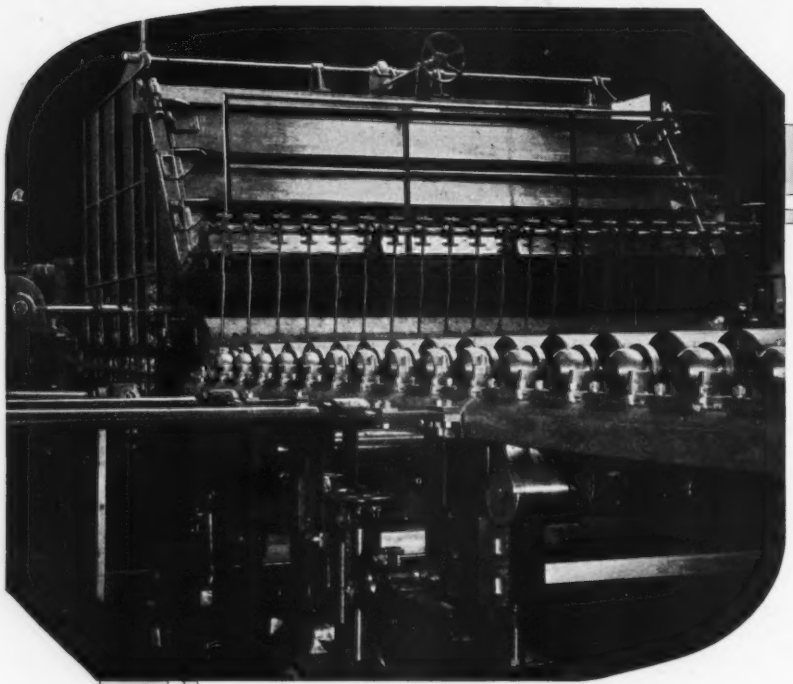

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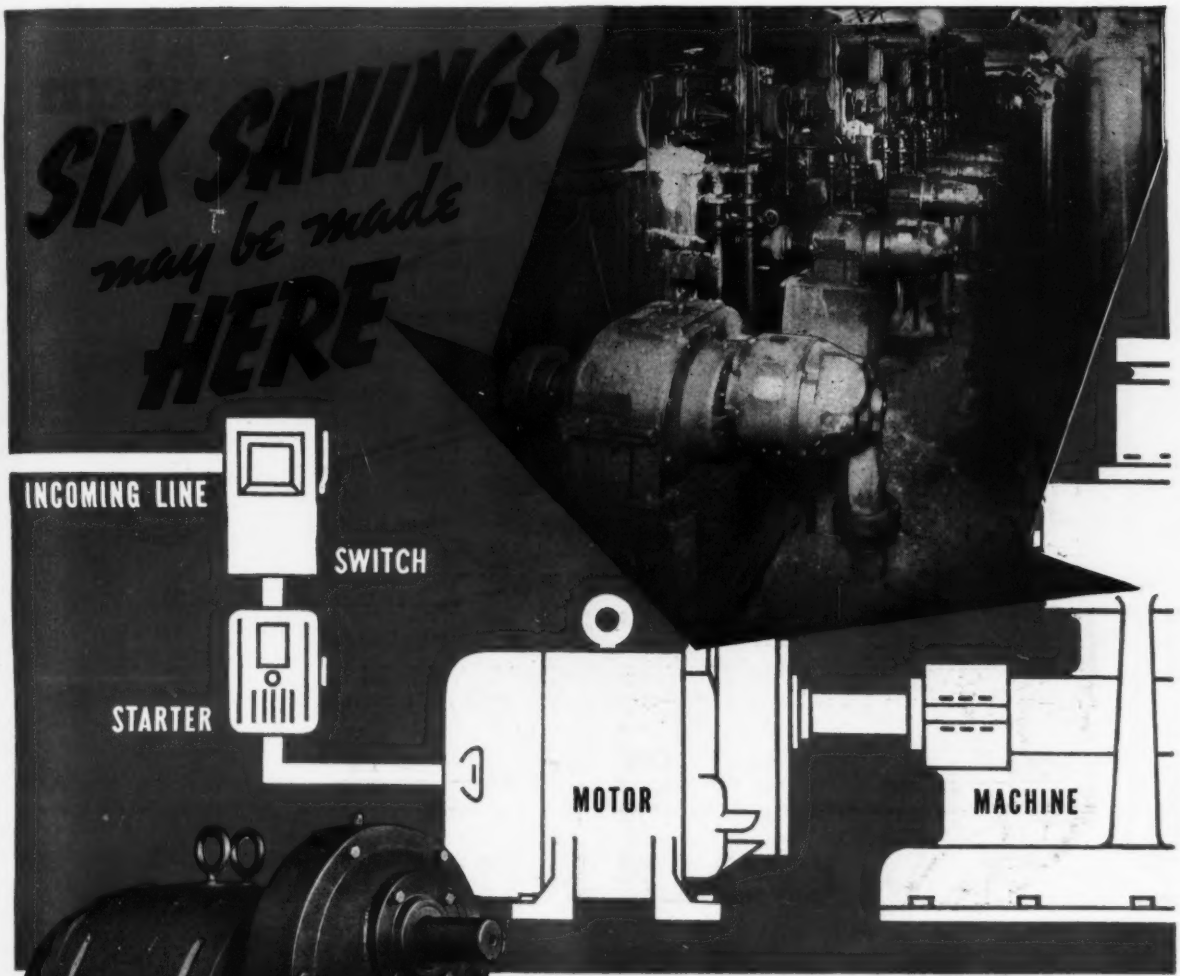

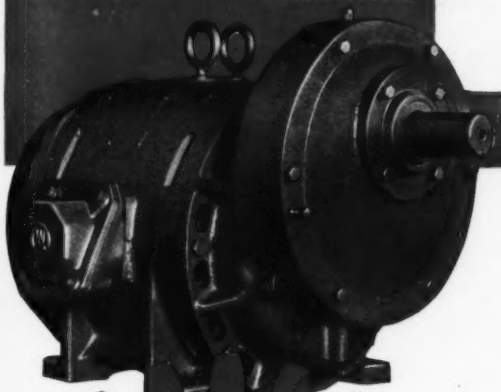

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1938
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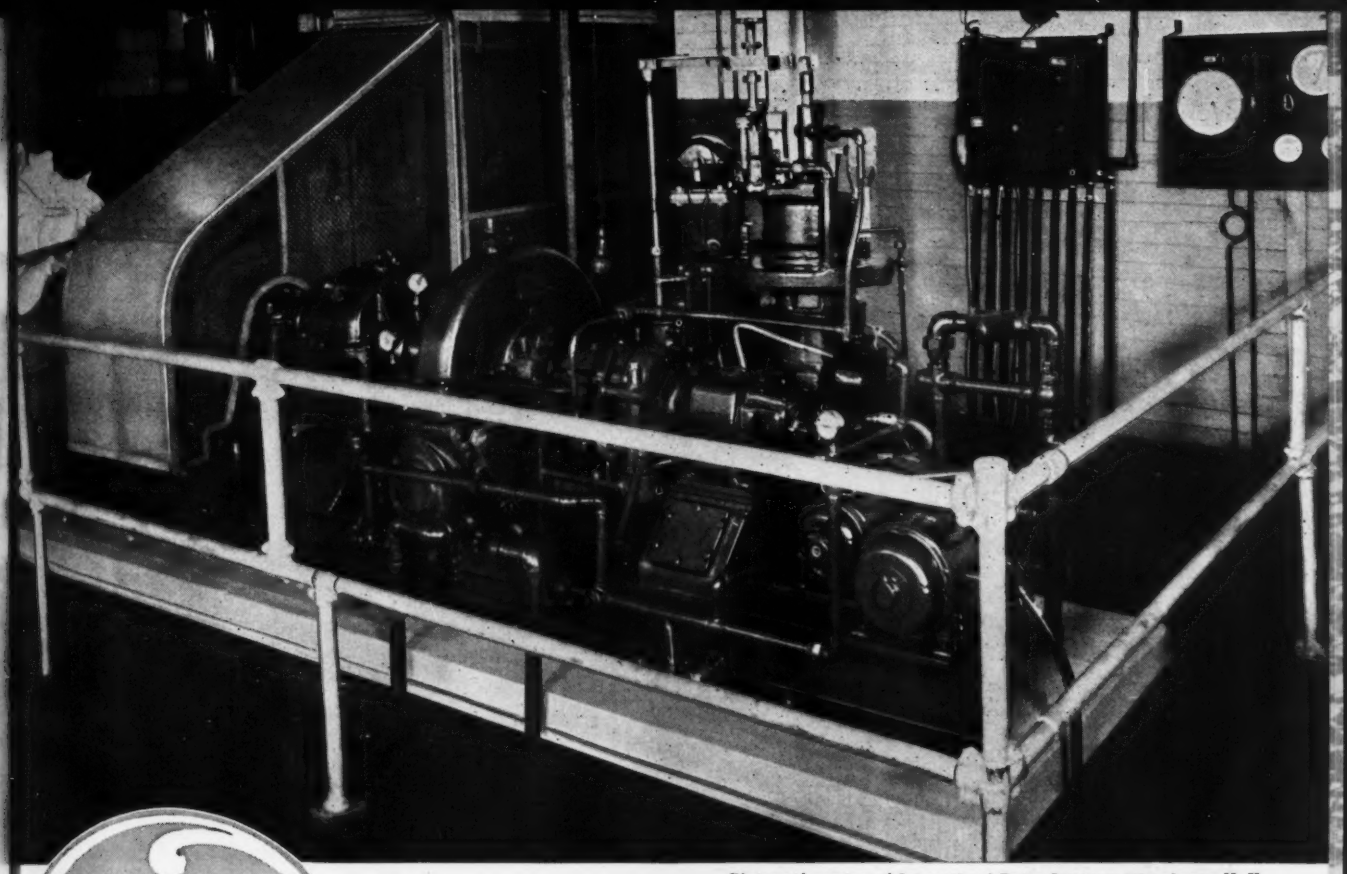

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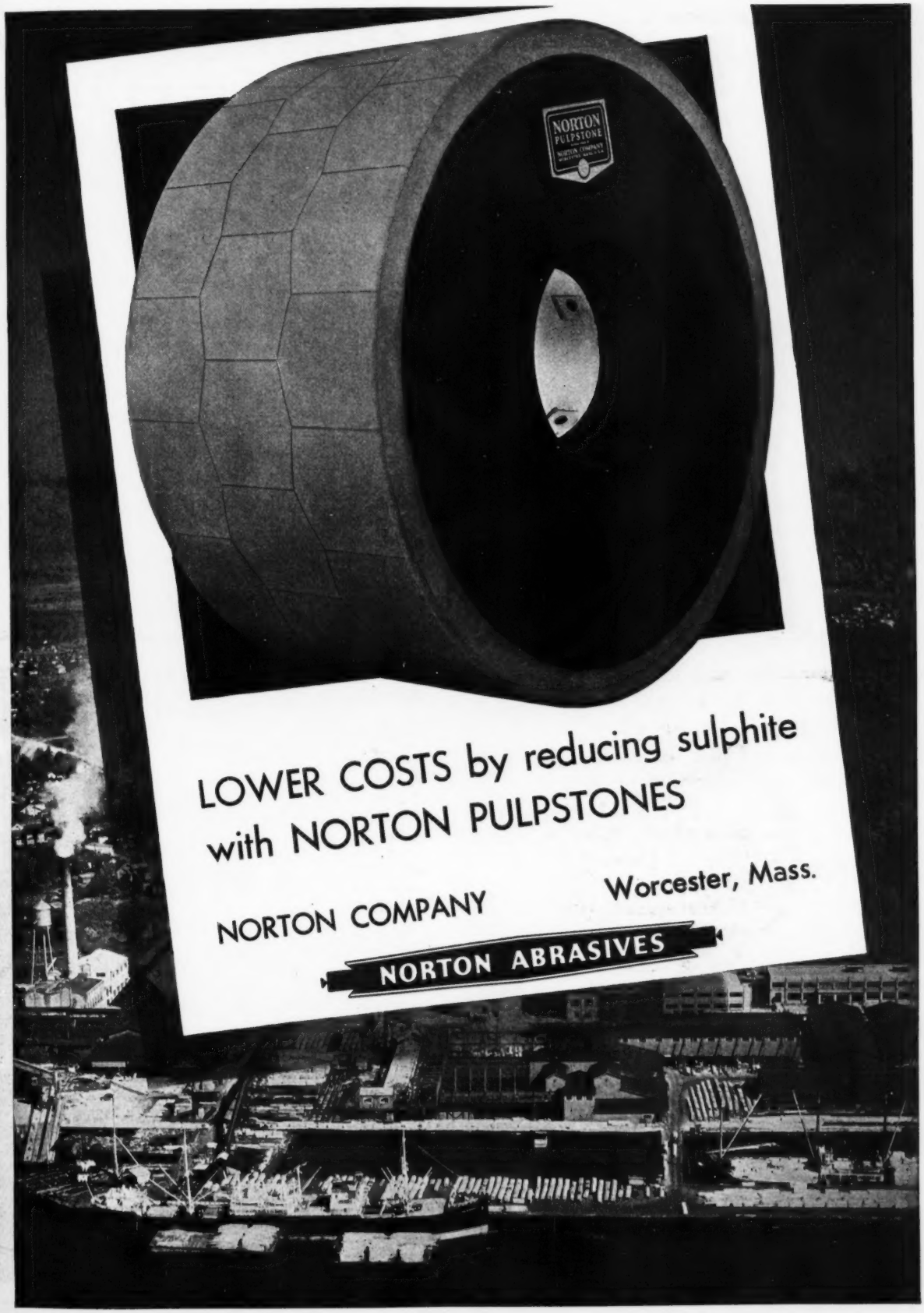
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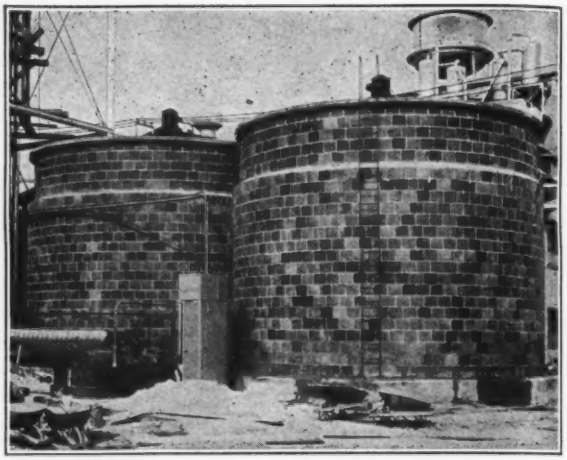

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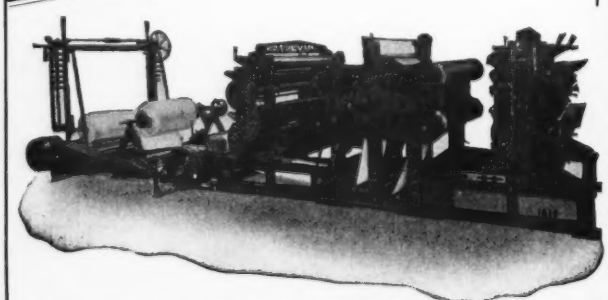

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PAPER TRADE JOURNAL

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Published Every Thursday by the LOCKWOOD TRADE JOURNAL CO., Inc.

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SIXTY-SIXTH YEAR

PAPER

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. CVI, No. 22

Thursday, June 2, 1938

Established Sept. 21, 1918
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Employment in Paper Industry at Good Level

Reports of 91 Wisconsin Companies Announced By Industrial Commission Reflect Satisfactory Employment Situation—Safety Conference Banquet Attended by 3,000—Movement of Pulp Wood Begins—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 31, 1938—Employment in all branches of the paper industry in Wisconsin has been holding steady during the spring period, in fact showing a slight upturn, according to reports compiled from 91 concerns by the Wisconsin Industrial Commission at Madison, Wis. These reports have been announced up to April 1 by the commission, but it is believed those for the month of May will not be as promising. Inventories of manufactured stock in some mills are the highest they have been for several years, and unless the volume of orders increases shortly, there are prospects of a slowing down of production by curtailing working schedules.

Employment in Converting Plants

Converting and specialty plants have been holding up somewhat better than the pulp and paper mills. In the month of February, the 91 plants reported a total of 16,640 persons on the payrolls, an increase of 0.1 per cent over January. The 29 box and carton plants reported 1,308 employes, a gain of 2.5 per cent over January.

Forty-three paper and pulp mills reported 13,925 workers, and a decline of 0.3 per cent. Paper products plants numbering 19 had 1,407 on the payrolls with a gain of 0.9 per cent. Weekly payrolls for February in all of the plants totalled $416,479, a gain of 5.5 per cent over January, with all branches of the industry showing increases. Average weekly earnings per worker were $25.20 and the average number of hours worked was 41.3. This gave average hourly wage rates of 61.1.

March reports from 93 plants showed 16,755 workers; a gain of 0.4 per cent over February; total payrolls per week of $415,158, representing a decline of 0.2 per cent from February; average weekly earnings per worker of $25.07; an average work week of 41.3 hours, and an average hourly wage of 60.7 cents. Thirty box plants with 1,344 workers showed an increase of 2.8 per cent and payrolls of $29,136 per week, an increase of 4.6 per cent. Forty-three paper and pulp mills, reporting 13,927 represented no change from February, but total weekly payrolls of $354,755 represented a decline of 0.2 per cent. Twenty paper products plants with 1,484 workers showed an employment increase of 0.8 per cent, but a decline of 3.6 per cent in weekly payrolls totalling $31,267.

Increased Employment in Printing Industry

Wisconsin's printing, publishing and allied industries showed increases of 3.3 per cent in the number of employees in February over January, and 1.0 per cent in March over February. Payrolls were up 5.4 per cent in February, and 2.5 per cent in March. Reports were from 119 concerns with 5,246 workers and weekly payrolls of $168,117. The average weekly earnings in March were $30.98 per worker for a 37-hour average week, averaging 83.6 per hour.

Wholesalers of paper and paper products in Wisconsin showed a decline of 4.3 per cent below January in their employment for February, but remained at the February level in March. Payrolls declined 1.0 per cent in February, but gained 3.2 per cent in March.

Safety Conference Banquet Largely Attended

With 3,000 in attendance, and 1,400 at the closing banquet, the Fox River Valley and Lake Shore Safety Conference at Green Bay, Wis., Thursday, June 26, was considered the largest sectional meeting of its kind ever held. Paper mills throughout the entire area were well represented by personnel managers, superintendents, foremen and other executives. One of the sectional meetings was a luncheon at the Beaumont hotel at noon for the paper industry representatives at which problems affecting them in particular were discussed. B. J. Mc Closky, personnel director of Hoberg Paper Mills, Inc., Green Bay, was the chairman. An address was given by J. J. Plzak, claims manager of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., on the subject, "Safety—Practicality or Sentimentality?"

General conference sessions in the morning were presided over by J. M. Conway, president of the Hoberg Paper Mills, Inc., and a director of the Chamber of Commerce of the United States. He introduced Herman L. Ekern, lieutenant governor of Wisconsin, who spoke in the absence of Gov. Philip F. La Follette. He declared that the industrial accident trend in Wisconsin is lower than that of other states, showing that the quarter-century

(Continued on page 33)

Demands Federal Ownership of Anticosti

Former Premier Bennett of Quebec in House of Commons Urges Government to Purchase Anticosti Island in Gulf of St. Lawrence—Many Protest Acquisition of Tract by German Interests — Other Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 30, 1938—Demand that the Federal Government should take immediate steps to acquire ownership of the land surface of Anticosti Island has been made in the House of Commons by ex-Premier R. B. Bennett. This proposal follows the recent negotiations between the Consolidated Paper Corporation, present owners of the island, and a German syndicate, whereby the latter planned to acquire the pulpwood on the island, presumably for manufacture in a mill of its own on the island. The deal has never gone through but last fall a delegation of German experts visited the island and carried out a series of surveys—an action which aroused considerable comment in the press. As Anticosti is in the Gulf of the St. Lawrence, and is of recognized strategic value, there were many protests against allowing Germans to have a foothold on the island, and Mr. Bennett's proposal is in sequence.

Mr. Bennett said he had received many representations about the proposed purchase of the island by a foreign syndicate. At first he admitted he was inclined to regard these as rather exaggerated and hysterical but on second thought he had come to regard the situation as dangerous. Under normal conditions it would not be dangerous, he said, but today great importance could be attached to it.

The House was reminded by Mr. Bennett that in the states of Washington and California, both on the Pacific Coast, no foreigner was allowed to own property or land. The reason, he thought, was obvious, from a national defence standpoint. In the case of Anticosti he said he had found that investigations of the natural value of the island had been conducted for the syndicate by what he called eminent militarists in Germany. He considered it was essential to the national well being that the Dominion should take over the island.

Ontario Government Watching Developments

Premier W. L. Mackenzie King said the Government had been fully alive to the situation right from the beginning. He added: "We have been watching the situation very carefully, and have been in consultation with the Government of the Province of Quebec in relation to it. I am glad to be able to say that the Government of Quebec and this Government were of one view with respect to the importance of that island being kept securely for Canadian interests, and that no foreign interests should get any control of it in a manner that could possibly prejudice the position either of Quebec or of Canada. The Departments of Justice and National Defence have been at work for some time past on getting detailed information and considering what steps were necessary and advisable."

Further Drop in Newsprint Exports

Figures just released by the Dominion Bureau of Statistics show that there was a further drop in exports of newsprint in April, as compared with March, and also as compared with April last year. The total exports amounted to 3,734,532 cwts., valued at $7,979,896, as against 4,074,576 cwts., valued at $8,685,337 in the previous month and 5,055,809 cwts., valued at $9,217,217 in April, 1937. Of the total, the United States took 2,888,197 cwts., valued at $6,264,919. The remainder went to 22 other countries. Australia taking 354,818 cwts., valued at $741,815; the United Kingdom 262,966 cwts., valued at $421,877; and Argentina 88,556 cwts., valued at $270,306. The total wood pulp exported in April amounted to 651,793 cwts., valued at $1,813,017, as compared with 1,211,357 cwts., valued at $2,817,801 in April, 1937.

Paper Mill Union Elect Officers

At a meeting of the Quebec Provincial Council of Paper Mill Unions, in Quebec City, Chester Jordan, Quebec, was chosen president. Other officers selected were: First vice-president L. P. Lacroix, Three Rivers; second vice-president F. Dickens, Hull; third vice-president W. O. Brown, Kenogami; fourth vice-president H. Hicks, Kenogami; secretary-treasurer, John Duplain, Quebec.

Delegates numbering 76 represented 35 international locals Quebec, Three Rivers, Hull-Gatineau, Baie Comeau, etc.

Takeo Ota Visits Paper Plants

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., May 31, 1938.—An engineering survey and study of paper mills and other industries in Northern New York and Canada is being made by Takeo Ota, an engineer connected with the Oji Paper Manufacturing Company of Tomakomai, Japan. Among the plants which he already has surveyed are the Bagley & Sewall Company, Dominion Engineering Works and Walmsley Machine Company, Montreal; Three Rivers and Gatineau branches of the International Paper Company, and Consolidated Paper Company.

He is now continuing a survey at the Glens Falls mills of Finch, Pruyn & Co.

Sands, Clays and Minerals

Under the above publication title, No. 3, Vol. 3 of the quarterly magazine published at $1 per copy by A. L. Curtis, Chatteris, Cambs, England, contains articles of special interest to technologists and industrialists. Among the articles of historical and scientific interest is an article on "Early Technical Balances," showing the earliest balances, such as used by Agricola in 1556, down to the self-registering balance of 1765. Of particular interest to the paper industry is an article on "Mode of Occurrence and Preparation of China Clays", which describes the famous clay deposits of Cornwall.

Sales Stimulation Plan May Help Paper Trade

Indications of Renewed Activity in Papers for Advertising Encourages Midwest Industry—Illinois Considers "Use Tax" to Finance Relief Needs —S.A.P.I. Members see "Men and Trees" Film — Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 30, 1938—The paper industry in this section continues at about "status quo". Demand is slow and uninspiring though more or less holding its own. There is some indication of renewed activity in certain advertising papers where business seems to be beginning an effort to stimulate sales on a wide plane. Business in quality papers is running fairly evenly.

Sulphite bonds showed little change during the week with all grades showing a disposition to go along without immediate prospects of improvement. Krafts were about the same as last week while books and covers also registered no change. Book papers were slow and mills reported materially curtailed operations, according to local reports. Paper board markets were about even though in some phases of the building board market a slightly increased activity was reported. Ground wood papers and newsprint showed little disposition to go contrary to the dullness in the general business market while waste papers continued to be in the doldrums as far as any demand is concerned.

Salesmen See "Men and Trees" Film

The midwest division of the Salesmens Association of the Paper Industry had one of its biggest turnouts on Monday, May 23, when the popular Weyerhauser sound film was shown for the benefit of more than 125 members and guests. The meeting was in charge of John Digg, vice president of the mid-west division. The film, entitled "Men and Trees" showed mostly woods operations, including cutting, logging, fire prevention methods et cetera. A part of the film centered on pulp making activities though the film was basically designed to portray the immensity and exactitude of the lumber operations themselves.

Reserve Report of Paper and Printing

The paper and printing industry in the seventh Federal reserve district did as well as the entire nondurable goods group during the period from March 15 to April 15 in the matter of earnings and showed a better record from the standpoint of wage earners. The 742 paper and printing firms reporting from Wisconsin, Michigan, Indiana, Illinois and Iowa showed 74,536 wage earners and earnings of $2,028,000 for the week of April 15. The total of wage earners was 1.2 per cent less than for the week ending March 15 while the total of earnings was 2.2 per cent under the month previous. For the total manufacturing groups wage earner totals declined 3.8 per cent while earnings were off 2.2 per cent, the identical figure presented by the paper and printing industry.

Illinois Considers "Use Tax"

The Illinois Legislature, in special session to primarily consider ways and means of financing the present relief crisis, now has before it Senate Bill No. 8, a form of "use tax" expected to bring in more than $3,000,000 in revenue. The bill is radically different than that proposed in Illinois about one year ago in that this bill exempts property purchased for personal consumption from out-of-the-state sellers and actually imposes the tax only where tangible personal property is purchased for use in connection with a business. The tax is aimed directly at persons who buy properties such as coal, cement, lumber, machinery, trucks and items of that type as well as at Illinois business firms purchasing wrapping paper and paper supplies outside the State. The bill definitely becomes of more use to the Illinois paper industry that the earlier Monroe bill in that it imposes the tax only where tangible personal property is purchased for use in connection with a business and is designed to prevent Illinois firms from purchasing paper outside the State to escape the payment of the 3 per cent Occupational Tax. To local paper houses who have been faced with some exceedingly difficult competition, the Harper measure, if passed, would probably be of genuine assistance though there continues to be some wonder as to how the measure can possibly be administrated.

Paper Made in Honor of Franklin

Harrison Elliott, of the Japan Paper Company, 109 East 31st Street, New York, has sent the PAPER TRADE JOURNAL a keepsake which was printed for distribution in the Graphic Arts Division of the Franklin Institute, Philadelphia, during the recent Franklin Commemorative Ceremonies.

The paper on which this keepsake was printed was made by Mr. Elliott by hand with a small demonstration equipment in the offices of the Japan Paper Company prior to the celebration so as to have on hand a quantity for distribution at the Papermaking Exhibit.

The watermark is a reproduction of Franklin's own device and was copied from an original found in a copy of the 1754 edition of Poor Richard's Almanac. A screen with a reproduction of the original watermark was made by Joseph J. Plank & Co., and was fitted into the hand mould with which the paper was made by Mr. Elliott.

The idea was to produce a rag paper as made in Franklin's day and to have the sheet possess some of the characteristic defects of that period before a careful screening system had been devised. The rag pulp used was taken from a beater before screening and was furnished by Crane & Company, Dalton, Mass., for the occasion.

It is interesting to recall that Franklin was instrumental in establishing eighteen paper mills in this country, and although primarily a printer, papermaking was not the least of his varied interests.

Note: The exhibit which made this interesting keepsake possible was arranged by the following Paper Manufacturers: Curtis Paper Co., Newark, Del.; Dill & Collins Company, Philadelphia; P. H. Glatfelter Company, Spring Grove, Pa.; W. C. Hamilton Co., Miquon, Pa.

Ontario Paper Industry Awaiting Upturn

Volume of Spring Business Declines Well Below That of Last Year—Reduced Demand and Lower Prices in Pulp Wood — Canadian Paper Box Assn. To Convene at Niagara Falls June 14—Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 30, 1938.—The paper market generally continues dull and May was not as satisfactory a month as desired or hoped for. When an upturn will occur no one cares to make any predictions. On the whole the paper business, for the first four months of 1938, has fallen off from 25 to 50 per cent and in some lines more. Consumers are ordering from hand to mouth and the mills have all caught up with orders. There is one hope and this is, the reserves accumulated some months ago can not last forever and the market will have to open up sooner or later. Some printers have been holding off, waiting for Canadian prices to drop but no decline is anticipated. In the lower grades, paper stocks in the dealers' hands are growing and twelve months ago the dealers could not meet the requisitions. In kraft, wrappings and bags buying is spotty and the amount of trade so far this year is about equal to that of the spring of 1936. Both folding and set-up boxes are not moving very well. Specialty paper producers are suffering. Some converters are fairly busy but coated papers are ordered only in moderate volume while tissue napkins and waxings may improve with the summer demand and the influx of the tourist traffic.

Demand and Prices of Pulp Wood

A. E. Wicks, Limited, Cochrane, Ont., who are extensive pulpwood dealers, say that the demand for wood has fallen off considerably and that prices are lower. Northern Ontario paper mills are running around forty to fifty per cent of capacity. The firm state that the action of the Ontario government in not allowing an abatement or reduction of dues, as it did for three years past, of forty cents per cord on wood from now on comes at an inopportune time—just when demand and prices are down. It is intimated that the provincial authorities might do well to reconsider their decision on this detail to permit the maximum production of wood to take place during the next few months.

Canadian Paper Box Mfgrs. Assn. Convention

The annual convention of the Canadian Paper Box Makers Association will be held at Niagara Falls, Ont., on June 13 and 14, at the General Brock hotel. It is expected there will be a record attendance and a fine program of social and business features has been drafted. There will be a golf tournament and the Fielder and Hinde and Dauch trophies will be presented. L. F. Winchell, vice president and general manager of the Hinde and Dauch Paper Company of Canada, Toronto, has produced a unique souvenir entitled "Hodderwatha" in a distinctive cover in black and gold, with an Indian powwow setting in colors, richly blended. The title is a combination of the name of C. V. Hodder, manager of the Canadian Paper Box Makers Association and the famous poem of Henry W. Longfellow "Hiawatha." Mr. Winchell is the author of several verses written in Hiawathan style on the features of the convention and the characteristics of leading box manufacturers and paper board men, the pages being adorned with various Indian symbols.

Action Against C. W. Cox Postponed

Action against C. W. Cox, Mayor of Port Arthur, Ont., and widely known pulpwood dealer by Geo. Hourigan and others has been postponed so far as the hearing is concerned until a date to be determined by the court. The case was originally one for the settlement of claims in respect to materials supplied. Mr. Cox contends there was a settlement made several years ago. The case of the Pigeon Timber Company vs. Cox, a similar action, has also been adjourned to a later court.

Urges Government to Conserve Forests

In the House of Commons, Ottawa, during the past week, D. G. Ross, M. P., for one of the Toronto Divisions, urged upon the Federal Government that something be done to conserve forest resources and prevent the exportation of raw forest products such as pulpwood. Hon. T. A. Crerar, Minister of Resources, said that the forests were administered by the provinces in which they were located. Hon. C. A. Dunning, Minister of Finance, said that it would be possible for parliament to embargo the export of any commercial commodity but if an embargo was placed upon the export of raw pulpwood or logs it would effect all of Canada and not be restricted to any particular section.

Pneumatic Telemetering System

A pneumatic telemetering system for recording and automatically controlling temperature, flow, pressure, and liquid level, known as Bristol's Metavane System, has been developed by The Bristol Company, Waterbury, Conn. While this telemetering system has a wide field of application in industry, it is particularly well suited for use in plants where explosive fumes are present. Being operated entirely by air under pressure, the explosion hazard present when electricity is used is completely eliminated.

Bristol's Metavane System of Telemetering provides a simple, accurate method of measuring such variables as those mentioned above, at any point in a plant or process, and of transmitting the measured value pneumatically to some remote central location where it can be either recorded, indicated, or automatically controlled.

The Metavane consists of two instruments: the transmitter and the receiver. The transmitter measures the variable in question, indicates its value on a scale for the use of the operator, and transmits the reading to the receiver, which may be several hundred feet away. The two instruments are connected together by means of copper tubing. A 15 lb. air supply introduced at the transmitter provides power to the telemetering system.

Financial News of Pulp and Paper Industry

Taggart Corp. to Submit Proposal to Stockholders to Acquire Subsidiaries and Assume Their Funded Debt—Canadian International Sales and Earnings Up — Crown Zellerbach Declares Dividend — Other Late News.

NEW YORK STOCK EXCHANGE

High, Low and Last for the Week Ending June 1, 1938

	High	Low	Last
A. P. W.	2½	2½	2½
Armstrong Cork Co.	27¼	26	27½
Celotex Corp.	17	15½	16
Certain-Teed Products Corp.	5½	5⅛	5½
Certain-Teed Products Corp., pf.	22½	21	22½
Champion Paper & Fibre Co.	21	19	19½
Champion Paper & Fibre Co., pf.	94¾	94	94
Congoleum-Nairn Co.	17	16½	17
Container Corp. of America	10¼	9¾	10¼
Continental-Diamond Fibre Co.	6⅜	6¼	6¼
Crown-Zellerbach Co.	8½	8⅛	8½
Flintkote Co.	14½	12¾	13⅞
Robert Gair	3	3	3
International Paper & Power	6¾	5¾	6¾
International Paper & Power, pf.	27	23¼	26½
Johns-Manville Corp.	65⅛	61½	63½
Kimberly-Clark Corp.	22	22	22
MacAndrews & Forbes, pf.	120	120	120
Masonite Corp.	29	27¾	27¾
Mead Corp.	8⅞	8⅞	8⅞
Paraffine Companies, Inc.	30	29⅞	29⅞
Ruberoid Co.	17½	17	17
Scott Paper Co.	40½	39¾	40
Sutherland Paper Co.	22	21½	22
Union Bag & Paper Corp.	9	8¼	9
United Paperboard Co.	3⅞	3⅞	3⅞
U. S. Gypsum Co.	67½	63	65

NEW YORK CURB EXCHANGE

High, Low and Last for the Week Ending June 1, 1938

	High	Low	Last
American Box Board Co.	6¼	6⅛	6⅛
Brown Co., pf.	19	19	19
Great Northern Paper	27	26¼	26¼
St. Regis Paper Co.	2⅞	2⅝	2⅞
Taggart Corp.	4½	4¼	4¼

Taggart Corp. To Acquire Subsidiaries

OSWEGO, N. Y., May 31, 1938—Taggart Corporation will acquire the properties of its subsidiaries and assume their funded debt, under a proposal which will be submitted to stockholders at the annual meeting on June 8. Since it was organized Taggart Corporation has been a holding company, owning all the issued capital stocks of Taggart Brothers Company, Taggart Oswego Paper and Bag Corporation and Champion Paper Corporation which in turn owns all the capital stock of Carthage Power Corporation. The subsidiary companies make kraft and manila paper and convert it into multi-wall and other types of heavy paper bags used for packing cement, flour, plaster, lime, gypsum and other products.

Direct ownership of the business and properties of the subsidiaries is desirable because of recent changes in the income tax laws and the possibility of enactment of further statutes, Roy K. Ferguson, president, says.

According to the audited consolidated balance sheet of the Taggart Corporation and its subsidiaries dated last December 31 the total was $2,712,000 of which $1,181,000 funded debt consists of six per cent first mortgage bonds, less $42,000 in the treasury, against the Taggart Brothers Company, Inc., city; $1,162,500 of similar 20-year bonds due annually until 1947 and 1948 against the Taggart Oswego Paper and Bag Corporation, and $368,500 six per cent sinking fund bonds, less $21,000 in the treasury, due February 1, 1945, against the Champion company.

There will be no change made in the capitalization of the business, the assets of which show $1,865,619.45 against liabilities of $696,149.98.

Canadian I. P. Shows Improvement

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 31, 1938.—The 1937 financial statement of the Canadian International Paper Company and subsidiary companies showed substantial improvement in sales and earnings. Consolidated operating profit, after deducting cost of sales and crediting other income, was $8,039,210, as compared with $7,236,553 for 1936. After all charges, including interest on parent and subsidiary companies' obligations, depreciation, depletion, etc., there was a net loss of $686,303, against a net loss in the previous year of $1,836,966, the latter figure, however, being after charging an amount of $504,400, undeclared dividend on preference shares of subsidiary company, which amount was not charged in the accounts for the past year.

The balance sheet shows current assets of $28,744,633, against current liabilities of $10,042,414, leaving net working capital of $18,702,219, against $14,187,187 a year ago. Inventory stands at $19,043,084. against $15,792,563. Total assets at $156,934,361 compare with $152,817,839.

Crown Zellerbach Dividend 12½ Cents

The Crown Zellerbach Corporation has declared a dividend of 12½ cents a share on the common stock, which compared with 25 cents paid on April 1. This is an interim payment and should not be considered as placing the stock on a dividend basis, the company stated.

S. D. Warren Co. Pays 50 Cents

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 31, 1938.—The S. D. Warren Company has declared a dividend of 50 cents a share, payable June 27 on stock of record June 18. All the stock of the company is common stock.

Nashua Gummed Paper Report

Nashua Gummed and Coated Paper Company reported for the March quarter a net loss of $22,862, compared with net income in 1937 of $120,055, equal to 3.09 each on 39,559 common shares after allowing for preferred dividends.

A. P. W. Paper Reports Loss

The A. P. W. Paper Company, Inc., for the nine months to March 31, reported a net loss of $126,747, against $2,788 loss in corresponding period of previous year.

Tentative Program for Superintendents' Convention at Toronto

The following is the tentative program for the nineteenth annual convention of the American Pulp and Paper Mill Superintendents Association to be held June 22-24 in the Royal York Hotel, Toronto, Ont:—

Wednesday, June 22

11:00 A. M. Invocation.
In Memoriam.
Address of Welcome.
Reply to Address of Welcome.
President's Address.

12:20 P. M. Luncheon — Chairman, L. F. Winchell, vice president and general manager, Hinde & Dauch Paper Company of Canada, Ltd., Toronto, Ont. Speaker, B. K. Sandwell, Editor of the Toronto *Saturday Night.*

2:00 P. M. Papers—presented by:
Alexander Strong, Rath & Strong, Inc., engineers, 80 Federal street, Boston, Mass. —"The Development of Modern Wage Incentives."
Donald Ross—Ross, Howard Smith Paper Mills, Ltd., Cornwall, Ont.
Burt Kassing, Hammermill Paper Company, Erie, Pa.—"Paper Machine Efficiency."

8:50 P. M. Boat trip on Lake Ontario.

Thursday, June 23

9:20 A. M. Group Meetings.
12:30 to 3:30 P. M. Golf tournament.
8:00 P. M. Smoker.

Friday, June 24

9:20 A. M. Exhibits.

12:20 P. M. Luncheon—Chairman to be selected. Speaker—R. A. McInnis, President of the Canadian Pulp and Paper Association.

2:00 P. M. Papers—presented by: Dr. Gerard L. Larocque, Pulp and Paper Division of the Forest Products Laboratories, 3420 University St., Montreal, Quebec — "The Control of Printing Quality in a Paper and Board Mill". Oliver Watson, Bridgen's Ltd., Toronto, Ont.—"Printers' Paper Problems". Harry Williamson, Williamson Research Corporation, New York, N. Y.

7:30 P. M. Banquet—Chairman — Harold Crabtree, president, Howard Smith Paper Mills, Ltd. Speaker—Hon. Mitchell Hepburn, Prime Minister of Ont. Program and dancing.

Programs For Group Meetings

CHEMICAL PULP—John McCrystle, Brown Corporation, LaTuque, Que., Chairman. Paper by: Dr. Rosenblad, "Heat Recovery in Pulp Mills."

PLANT AND POWER ENGINEERS—K. E. Terry, S. D. Warren Company, Cumberland Mills, Maine, Chairman. Paper by: Grover Keeth, Chief Engineer, Marathon Paper Mills Company, Rothschild, Wis., on "Maintenance of Pulp and Paper Mill Equipment." Symposium by machinery builders on "Recent Improvements in the Paper Machine."

TISSUE—J. E. Blosser, Veldown Company, Glens Falls, New York. Symposium by machinery builders. Mr. Blosser's committee is as follows: H. R. Wheeler, Victoria Paper Mills Company, Fulton, N. Y.; H. D. Cooks, Sweet Bros. Paper Manufacturing Company, Inc., Phoenix, N. Y.; G. E. Rausch, Interlake Tissue Mills Company, Ltd., Merritton, Ont.; C. A. Blodgett, A. P. W. Paper Company, Albany, N. Y.; J. L. Hollihan, Port Huron Sulphite Paper Company, Port Huron, Mich.

FINE PAPER—COATED—R. W. Hynes, Newton Falls Paper Company, Newton Falls, N. Y., Chairman; Elbert G. Milham, Watervliet Paper Company, Watervliet, Mich., Chairman. Papers by: Paul de Guehery, Michigan Paper Company, Plainwell, Mich., "A Comparison of the Modern Methods of Coating Paper." S. C. Lyon, The Georgia Kaolin Company, 230 Park avenue, New York, N. Y.—"Machine Coated Papers Focus Attention Upon Clays."

BOARD—R. M. Cook, Hinde & Dauch Paper Company of Canada, Ltd., Toronto, Ont., Chairman. Papers by: L. E. Weiser, National Folding Box Company, New Haven, Conn., "Operating Results of the Black & Clawson Wet End." A. Yraola, chemist, Hinde & Dauch Paper Company of Canada, Ltd., Toronto, Ont.—"Effect of Starch on Printing Quality of Boards."

FINISHING, STORING & SHIPPING—Donald R. Dick, Howard Smith Paper Mills, Ltd., Cornwall, Ont., Chairman. Motion picture by: Thos. A. Edison, Inc.—"Industrial Trucks."

COARSE PAPERS—H. D. Hyman, J. R. Booth, Ltd., Ottawa, Ont., Chairman. Paper by: Arthur J. Edward, Superintendent Technical Service, New Brunswick International Paper Company, Dalhousie, N. B.—"The Control of Variables of High Speed Newsprint Operation."

At the Smoker on Thursday evening, there will be eight outstanding entertainment features. The same features will be presented for the Ladies' Dinner on Thursday evening.

The Sports Committee comprises: J. M. Stephenson, Pulp and Paper Magazine of Canada, Gardenvale, Quebec, Chairman.

GOLF—C. P. Ludington, E. B. Eddy Company, Hull,

Quebec; Joseph Dow, 47 Chestnut St., Nutley, N. J.
LAWN BOWLING—R. A. Garrett.
SKEET SHOOTING—E. C. Jacobi, A. E. Broughton & Company, Glens Falls, N. Y.
AQUATIC EXHIBITION—T. C. Lloyd.
LADIES GOLF—Mrs. B. D. Millidge, Cornwall, Ontario.
LADIES BRIDGE—Mrs. A. E. H. Fair, Merritton, Ont.; Mrs. H. E. Karberg, Merritton, Ont.

City Sales Tax Cuts Merchants' Sales

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 30, 1938.—With regard to the operation of the city sales tax as it affects sales outside of the city limits, announcement is made today that leaders of City Council have arrived at a plan whereby an amendment to exempt from the tax all purchases made by persons living outside the city limits will be passed within a few weeks. It will be remembered that in these columns last week it was stated that Simon Walter, a former member of City Council and one of our leading paper merchants pointed out at the May luncheon meeting of the Philadelphia Paper & Cordage Association, that the committee was hard at work on the resolution presented by the Association three months ago when the city sales tax was imposed by City Council, offering amendments to the ordinance, and while nothing definite had been accomplished it was hoped that that portion of the tax pertaining to sales outside of the city limits, one of the most burdensome features of the levy, would definitely be repealed.

City Council, the body to first pass the tax, after finding all other suggestions for taxes to comply with the decree of the State Supreme Court to adopt a budget by January 31st, were inadequate or contrary to the State Constitution, passed the sales tax, promising to fight for a greater return of State taxes to Philadelphia which would eliminate any new local taxes.

Due to the imposition of this city sales tax, paper merchants in Philadelphia were experiencing heavy losses because their customers in the outlying districts who formerly did much of their purchasing in this city, switched to other trade areas where the tax was not levied.

Direct mail campaigns, launched by local paper houses, likewise experienced a setback because of the fact that the 2 per cent tax had to be added by the paper merchants in Philadelphia to the retail price of every purchase. So, it will be readily seen that this sales tax amendment will not only bring about a great measure of relief in retrieving business from out-of-town customers but will serve as a fillip to those houses doing a large volume of business by direct mail advertising.

To Play Golf at Virginia Beach

The annual invitation golf tournament of the Southeastern Paper Trade Association will be held at the Princess Anne Country Club Golf Course, Virginia Beach, June 17 and 18. This tournament has attracted large attendances each year, but 1938 promises to be the biggest and best yet, since members of the Southeastern Paper Trade Association are to be joined by members of the Maryland and District of Columbia Paper Trade Association.

Charged With Unfair Competition

WASHINGTON, D. C., May 31, 1938 — Charged with engaging in certain unfair methods of competition for the purpose of creating and maintaining a monopoly in the waste paper and other waste material business in Southern States, Letellier-Phillips Paper Company, Inc., 617 South Front street, New Orleans, is named respondent in a complaint issued by the Federal Trade Commission. The company, according to the complaint, buys, packs and sells waste materials of various kinds, including paper and rags.

For many years, the complaint charges, the respondent company has had dominant control of the waste paper business in the South and Southwest generally and in Louisiana, Texas and Mississippi particularly. As a result of such domination, it is alleged that large consumers of waste products in these sections are dependent to a large degree upon the respondent company for their requirements, and that other and smaller dealers must rely upon the same concern for an outlet for their supplies of these materials.

The complaint charges that the respondent company has unfairly disparaged competitors and endeavored to effectuate its alleged monopolistic purposes by threats, intimidation and attempted boycott.

It is alleged in the complaint that the respondent company, through its officers, has threatened to terminate all business relations with certain dealers with whom it does a large business; to discontinue supplying certain large consumers dependent upon the respondent company for waste materials, and to enter into active competition with other dealers, if such consumers and dealers persisted in dealing with certain of the respondent company's competitors located in Southern States.

The tendency and effect of the acts and practices alleged in the complaint have been, it is charged, to monopolize in the respondent company the waste material business in Southern States; to unreasonably lessen and restrain competition in such industry, and to deprive the purchasing public of the advantages in service and price it would receive under conditions of normal or free and fair competition.

Violation of the Federal Trade Commission Act is alleged in the complaint, which allows the respondent company 20 days to file answer.

New Manhattan Marblex Table Roll

Marblex Table Rolls, recently introduced by the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J., represent the latest development in the rubber roll covering field. They were developed to provide a better table roll to replace metal surface rolls previously used and are being recognized as an important contribution to better paper making.

Marblex is a distinctive red mottled composition that is manufactured exclusively by Manhattan. It has great resistance to abrasion, acidity and cracking, making it particularly suited for table roll covering. Its smooth surface dispels water as the roll travels downward, eliminating the fault of metal rolls carrying up surface water to disturb formation.

Better and longer wire surface is also assured with the use of Marblex Table Rolls because they entirely eliminate galvanic action. When necessary the surface may be turned down with little loss of rubber.

What Is the Matter with the U. S. Pulp Market?*

By Carlton B. Overton [1]

Having been asked to present my thoughts upon the above subject I approach the task with the realization that no completely detailed exposition is possible within the scope of this article. Moreover any discussion of the ills of and possible remedies for market conditions in connection with a commodity which enjoys a world wide outlet, as does wood pulp, must of necessity be limited to those factors which are potentially controllable. We may therefore eliminate for the present purpose such elements as monetary fluctuations, wars, customs changes, prolonged depressions, spasmodic development of new producing areas, and such other basic influences as will perforce control the general trend of prices and of necessity be beyond the effect of any action or cooperation originating within the trade itself.

Inside the limits of these general trends, however, we find the peaks and valleys of price rises and declines which are so harrowing to the manufacturers, purveyors and users of pulp, which affect to an ever increasing degree the basic prices of most grades of paper and which, at least in the past six years, have been much more precipitant and extreme than can be justified by any conceivable logic.

Fluctuations Unavoidable

There are bound to be seasonable and other unavoidable fluctuations in price but there is no earthly reason why the violent extremes of recent years cannot be leveled out to a reasonable degree if the trade as a whole will realize that it is the sole sufferer from the situation and has the tools of correction in its own hands.

At the outset let me make it clear that I intend to present no brief for any group or element in the industry. More than twenty years of intimate contact with the pulp trade in the United States has convinced me that all factors, foreign, domestic, buyer and seller have contributed to both the virtues and faults of the trade and that all would benefit if a better order could be brought about. Furthermore, examination of the course of events during the past twelve months proves that history has again repeated itself and that in a discussion of this sort nothing is to be gained unless all elements not only face the facts admitting, if necessary, that they have partly contributed to the errors of the past, but determine that correction can be brought about if, and only if, every element will contribute its full share of cooperative effort.

Of what use, for example, would it be for me, a seller of pulp and therefore entirely desirous of considering the feelings of my customers, the consumers of pulp, to pretend that these same consumers had not had their part in contributing to a situation which needs correction? I feel that I should be serving their cause poorly if I did not assume that they, who after all would be the greatest beneficiaries of an orderly market, would be more than willing to do their part in a corrective effort.

Nor would I be performing a service to the European mills, some of whom my company represents, if I pretended that their policies had never been anything but wise. And it would assuredly be ill-feigned consideration on my part of the American and Canadian mills to assume that their merchandising methods have always been beacon lights of wisdom.

A Brief Survey

A brief survey of the course of the market from the bottom of the depression to the present time should prove a background from which certain conclusions can be drawn. In 1932 trade was at the low ebb of the depression. Prices were admittedly below production costs and the pressure of new tonnage from recently constructed mills on both sides of the water contributed to the dismal outlook. As general business began to evidence signs of recovery and consumers showed increasing interest in buying, a desire on their part to prolong their low costs on sulphite resulted in considerable pressure being put upon European sellers to contract for rather extended periods at the then existing low levels. American and Canadian mills who had perhaps led the way in the establishment of low prices continued to follow the practice which, originally started under war time conditions has since remained their policy, viz: of quoting on a quarterly price basis although booking tonnage on the basis of a customer's "requirements" from month to month.

In spite of the fact that the American converting mills depend primarily on foreign pulp, the difference in the manner in which the foreign and domestic method of selling works out from the standpoint of the buyer resulted in pulp prices being kept comparatively low long after general commodity prices had started upward and as late as the early spring of 1936 pulp prices were within 25 per cent of the 1932 lows. By this time general business indices and production in the paper trade were such that the demand began to outrun the supply. The domestic mills unhampered for the most part by long term contracts were able to raise prices but due to the fact that many of their customers had sizable quantities of pulp still to come in on favorably priced contracts the increase in domestic prices was of necessity retarded.

Before the end of 1936 practically all consumers had contracted for their 1937 requirements of both foreign and domestic pulp, purchases having been made in most cases on the basis of 100 per cent of the buyer's anticipated 1937 operations. Meanwhile the world demand for pulp had been greatly augmented by the tremendous development of the non-paper uses for sulphite.

Under these conditions and with 1937 paper production exceeding expectations and with the fear of inflation in the air, buyers began contracting for 1938 on the basis of an expected consumption in

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* National Waste Review May, 1938.
[1] Vice-Pres., Castle & Overton, Inc.

excess of their then operating rate. Most foreign pulp was still coming in at figures lower than the then spot market, although sizable tonnages were now being sold at high prices and the quarterly price adjustments of the American mills were easily made at increasing figures, their only problem being that of their ability to deliver fast enough to take care of their customers. Foreign sellers found themselves able to make spot sales and forward contracts at increasingly high figures and by mid-summer of 1937 pulp prices were from 60 per cent to 80 per cent above those of early 1936—obviously too high and far ahead of any corresponding increase in paper prices or anything justified by increased wood or labor costs.

Unsettled World Conditions

Then what happened? Unsettled world conditions, increasing threats to business and the national economy from political sources, over-production and the beginning of a resultant deflation slowed the pace of business, retarded paper mill operations and the entire outlook was changed over night.

Heavy inventories at consuming mills and large stocks of foreign and domestic pulp at the ports pressed upon the market. Consumers recognizing their obligation under their foreign contracts calling for specified monthly tonnages did their utmost to absorb these commitments and at the same time were obliged to fall back upon the "requirements" clause in their domestic contracts. Increasing pressure from accumulated tonnage, and in some cases financial necessity, prompted resale of low cost pulp at prices below those at which producing mills here or abroad were willing to sell.

The inevitable result has been the same as that which has followed every period of abnormally high prices, namely, request for and necessity of adjustment of contracts, demoralization of markets, necessity of revaluing inventories, and an increasing danger of prices being allowed to plunge below the level of economic reasonableness before stabilization can set in.

The Answer Sought

What is the answer? We may pass over certain factors which contribute to the aggravation of an already acute situation, such as sheer speculation, resales, etc., as evils which will be unavoidable as long as human nature is what it is. But, if we analyze the above, two or three basic weaknesses stand out which, once corrected, would go far toward reestablishing healthiness to the situation.

In the first place the consumer should be put in a position where he does not have to become a speculator in pulp, endeavoring to buy 100 per cent of his requirements when he thinks the price is low and buying from hand to mouth when he thinks the price is high. He would be much better off and much happier if it were the common practice of the trade to contract for only a portion of normal requirements and buy the balance on the basis of short term purchases throughout the year. I believe that the consumer would prefer this procedure if he could be assured that the market would fluctuate only within reasonable limits as it did prior to the war. I believe that the first step to this end is a willingness on the part of all concerned to consider contracts as final and unchangeable. Once this were realized, over-buying would cease and both buyer and seller would be happier.

Second, standardize the terms of the foreign and especially the American contracts so that buyer and seller would have the assurance that a sale is a sale and not an obligation on the seller to deliver and an option to the buyer to take, recognizing that the primary object of all concerned should be to stabilize markets both of paper and of pulp, since the former is so dependent upon the latter, to the end that much of the periodical uncertainty heretofore existing may be eliminated.

Third, standardize the maximum period for which sales might be made with due allowance for the foreigner who has the problem of open and closed navigation to consider and freight contracts to make in order to protect the price to the consumer over periods of shortage in transportation facilities such as always exist in periods of great activity.

Should Be Sold On Its Merit

Under such conditions pulp would be sold on its merits, much of the conflict of interest between buyer and seller and between foreign and domestic producer would disappear. All have contributed to the chaos which has reigned. None can correct the situation alone.

All that is needed is a sincere mutual effort by the several groups whose interests are common and who already enjoy the mutual acquaintanceship and respect which should go far toward making any agreement upon desideratum a reality.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 1, 1938—The Enterprise Paper Bag Company has been awarded the contract for furnishing the Government Printing Office with 4,800 pounds (30,000 sheets) of No. 1 kraft paper, 24 x 36, at 5.5 cents per pound, bids for which were received on May 9.

Barton, Duer & Koch will furnish 10,000 pounds of 22½ x 28½ pink calendered tag board at 7.75 cents, bids for which were received on May 4.

Walker, Goulard Plehn Co. will furnish 5,000 pounds (52,000 sheets) of 25% rag, 20 x 25 sage antique cover paper at 9.71 cents and the Mahers-Lamm Paper Company will furnish 10,000 pounds of 26 x 38 strawboard at 3.48 cents. Bids for these items were received on April 29.

The following bids were received for 2,500 pounds (26,000 sheets) of 25 per cent rag, antique M.F. gold cover paper; Stanford Paper Company, 9.5 cents; R. P. Andrews Paper Company, 9.77 cents; Whitaker Paper Company, 10.09 cents; Reese & Reese, Inc., 12.37 cents; Mathers-Lamm Paper Company, 12.49 cents; Walker, Goulard Plehn Company, 9.5 cents.

For 2,000 pounds (12,200 sheets) of 25 x 38 dull finish book paper; R. P. Andrews Paper Company, 16.3 cents; and Barton, Duer & Koch Paper Company, 16.47 cents.

For 5,000 pounds (52,000 sheets) of 20 x 25, 25 per cent rag, antique M.F. light green cover paper; Stanford Paper Company, 9.5 cents; Whitaker Paper Company, 9.89 cents; R. P. Andrews Paper Company, 9.23 cents; Walker, Goulard Plehn Company, 9.46 cents; and Reese & Reese, Inc., 7.68 cents.

For 200,000 pounds of manila calendered tag board; Barton, Duer & Koch Paper Company, 6.73 cents.

Japanese Forest Resources and Requirements for Timber

By Ivan Elchibegoff [1]

Development of rayon and staple fiber industries has created a new raw material problem for Japan. Heretofore, the chief demand for wood has been from construction, woodworking, mining and related industries. The recent chemical discoveries in cellulose uses and the newly acquired leadership in the rayon industry, depending mostly on woodpulp, should cause considerable changes in the timber trade and the shifting of supplies obtained within the country and abroad among various consuming factors. Moreover, the question of timber supplies takes on an added significance, when it is realized that the Japanese forests are one of the chief natural resources and in a sense exemplify her position in regard to other raw materials.

Forest Resources

The Japanese claim and justifiably so that their country is one of the most forested countries in the world. In Japan proper and Hokkaido 62 per cent of the land area is covered with forests as compared with 24.8 per cent of the land area in the United States and 27.6 per cent in the Soviet Union (Table 1).

JAPANESE EMPIRE RESOURCES

Section	Total Land Area (in 1000 acres)	Forest Area	Percentage of Forest to Total Land Area
Japan Proper and Hokkaido	94488.6	58405	62
Korea	56513.7	40260	74
Taiwan	8854.2	6050	68
Karafuto	9314.2	6333	68
TOTAL	167170.7	111048	72 (Empire Average)

While the Empire ratio is even more favorable than that for Japan proper and Hokkaido, their ratios show her poverty in land rather than the abundance in forests. Economically, the forest area per person is a much better indicator of the country's position in resources — providing, as is the case with her, timber lands are evenly distributed. In this respect Japan is more favorably situated than either the U. S. or U. S. S. R. The Empire has a forest area of 111 million acres for a population of about 100 million, or 1.1 acre per capita compared with 3.8 acres in the U. S. and 5.5 acres in the Soviet Union. However, this ratio is bound to diminish because of her rapidly increasing population which grows at a rate of 1.5 million per year. Thus by 1950 the Japanese Empire will have a population of 120 million with 111 million acres or .92 acre of forest per person, and with no possibility of increasing forested area because of the population pressure on land resources and food capacity. In fact, it is not at all evident that all land where timber has been felled will rather be reforested than used for food crops. The mountainous topography of the country should be remembered in considering the utilization of the arable land area.

Another factor indicating an increasing shortage of domestic resources of timber for the growing requirements of industry is their distribution by species. The most important region of the country is situated in that part of the temperate zone where the broadleaved belt fuses into the coniferous, giving a rather large area of broadleaved and mixed forests. This situation caused the northern coniferous forests (Hokkaido and Karafuto), particularly in the last 15 years, to bear the brunt of national logging operations. The percentage distribution among various species in Japan proper and Hokkaido is—44 broadleaved, 27 mixed and 26 coniferous; and the relation is sharply changing in favor of coniferous trees in Karafuto. (No detailed data, however, are available.)

There are four commercially important coniferous species that constitute the bulk of Japanese felling —Sugi (Cedar, Cryptomeria Japonica), Matsu (Pine, Pinus densiflora, Pinus thimbergii), Ezomatzu and Todomatzu (Picea ajapanesis and Abies Sachalinensis), Hinoki (Cypress, Chamaecyparts obtusa). However, the importance of various species is going to be modified as the nation acquires better skill in planning reforestation and adapts to her needs faster growing coniferous trees. At present particular attention is paid to replanting bare areas with cedar, cypress, pine, fir, and hemlock spruce. Among the broad leaved species the most important are Kunugi (Quercus variabilis), Kuri (Castanea vulgaris), Kusu (Cinnamomum camphora), Keyaki (Zelowa acummata) and Kashi (Quercus myroinaefolia).

In the volume of standing timber, as distributed between hardwoods and softwoods, Japan cannot be said to be located very favorably. At present the ratio is 55 per cent and 45 per cent respectively. Actually it is worse than these percentages would show, since there are more mature hardwood stands than softwoods. However, these estimates (Table 2) in column one could be said to represent the real riches of the country in softwoods or more than 80 per cent commercially useful timber. If we deduct also from timber reserves those forests known as the Protective and Percentage and various other classifications, not subject to commercial exploitation, located all over Japan, we can readily understand why the Japanese will have an extremely difficult task to become self-sufficient in timber supplies and in the near future they will continue to increase their imports in one or another form, or face untimely destruction of socially and strategically located forests with very unpleasant consequences. However,

DISTRIBUTION OF TIMBER STANDS BY KIND
(in million cubic ft.)

	Coniferous	Broadleaf	Total
Japan Proper	42074	45774	87848
Hokkaido	7816	12962	20778
Korea	3780	2580	6360
Karafuto	5858	809	6667
Taiwan	2503	4729	7232
TOTAL	62031	66854	128885

[1] Author of a study on the Far Eastern Timber Trade, briefly summarized in the Far Eastern Survey, April 20, 1938.

if exploitation of Korean and Manchurian forests becomes economically feasible and the Japanese are able to introduce into these dependencies the same exemplary systems of forest management and control as they have within Japan proper, they will go a long way toward self-sufficiency and cut their imports to the most urgently needed qualities and quantities not obtainable within the Empire and these only in smallest possible volume. In view of the above, it is interesting to go briefly into the timber situation of her dependencies.

Chosen

Among her dependencies, Korea has the largest and most denuded forest area. It covers 40,350,000 acres or 74 per cent of the total land area; of this only 26.7 million acres can be considered as timber stands. The rest is recently afforested hills with young trees or bare tracts. Unlike the Japanese, the Koreans have never engaged in any forest activities, until the annexation of the country by Japan. Consequently, the country has an enormous task of rehabilitating its forests. According to the Chosen Government General, not fewer than 300 million trees are planted annually, predominantly in acerose trees such as the Acamatsu (Pinus thimbergii), the Chosen-Karamatsu (Larix dahurica, var. coreana), and the Chosen-Matsu (Pinus Koraiensis).

The State owns about 55 per cent of the timber resources of the country. They are located chiefly along the Rivers Yalu, Tumen, and Tardong, bordering "Manchukuo." The best of these stands are situated in the remote, economically inaccessible parts of the country. The Government directly participates in forestry and logging operations. The most important enterprise, the Forest Management Station, is engaged in the exploitation of 12 million acres of timber stands on the Yalu River, where the volume of available timber has been variously estimated at 4 to 6 billion cubic feet, of which ⅓ in broadleaved species and the rest in pine, larch and fir.

The Korean forest area represents 35 per cent of the Empire resources and the volume of standing timber is about 7 billion cubic feet out of the total of 128 billion cubic feet. The average production amounts only to 1/10 (600 million bd. feet) of the Japanese consumption and she is definitely a deficit area among Japan's dependencies. In every year since 1910 her balance of trade in timber has been unfavorable. The annual timber exports since 1920 averaged 4 million yen and imports 7.5 million yen. Most of her exports go usually to North China and Manchuria and imports come from Japan proper. However, Korea has been sending to the mainland about 7,000 metric tons of woodpulp annually. It is in Korea, among other places, that the Oji Paper Manufacturing Company has built a plant for making rayon pulp from larch with an initial capacity of 20,000 tons (1/50 of the present pulp consumption of Japan), hoping to increase the capacity to 40,000 tons in a short time. This is one of the Japanese efforts to become independent of pulp imports from abroad.

The exploitation of Korean resources is a matter, first of all, of economic availability. If the international price of pulp, in the present instance in the Pacific Northwest rises, then the country's resources will become available for pulping purposes. The second problem is to what extent there are present conditions for rapid growth of necessary species for pulping purposes. It is possible also that if timber resources become more economically available, they will be exploited to cover the country's deficit in lumber rather than utilized in pulp mills. A successful solution of all the above problems would increase the flow of pulp into Japan, but nothing will free Japan from the necessity of importing foreign pulp.

South Sachalin

Karafuto by and large is the most important colonial source of timber for Japan and has been so for the last 17 years. Incidentally, the beginning of intensive logging operations in South Sachalin coincided with the period when Japan was in transition from a surplus into a deficit country and large imports of the Northwest timber products began. South Sachalin's forest area is only 7.2 million acres or 6.4 of the Empire area and 68 per cent of her own land area. Her resources are estimated at 6 to 9 billion cubic feet of standing timber, overwhelmingly coniferous and composed of virgin fir and spruce forests. Broadleaved species are found in mixed forests in the river valleys and other low places. There are alders, birches, elms and willows. A little below mixed forests come larch trees.

The timber production in Karafuto has been constantly increasing since the Japanese got hold of it. Not even the caterpillar pest which destroyed millions of pine trees in 1920 stopped the progress of her logging operations, reaching a high point in 1932 when shipments to the mainland began to decline. Foreign observers expect that by 1942 these shipments may be brought to a stand still.

SHIPMENTS OF NORTHERN LUMBER TO JAPAN PROPER
(in M. bd. ft.)

Area	1933	1934	1935	1936	1937
North Saghalien	120675	43985	56123	4574	40800
South Saghalien	1086713	766577	538147	441600	381198
Hokkaido	.....	97958	77535	41900	31709
TOTAL	1207388	907720	671805	529238	453707

(Source: World Lumber Digest, Issue No. 174, p. 3, January 1938).

Her average annual production for the last 15 years has been 1.5 billion bd. ft., of which 1/3 was locally consumed and the rest shipped to the mainland mostly in the form of logs and some lumber and lately pulp. In the last few years mills were built and wood was reduced to pulp for paper mills in Japan and in 1935 a rayon mill began to operate in Shikuka. Altogether Karafuto supplied in the fiscal year 1935-36 179,096 metric tons in pulp and 156,195 metric tons in paper or about 1/6 of the Empire pulp production.

Taiwan

Formosa is another deficit colony in the Empire. Her place was always insignificant in the forest economy (except in camphor production). Her timber production reached the highest value in 1929—$6,407,858 and decreased gradually in 1933 to $2,-692,798. The amount fluctuates between 2 and 4 per cent of the Empire production. She staged a slight comeback in the fiscal year 1935-36. The government cut and sold 51 million bd. ft. of timber valued at 3,028,089 yen. In 1933, Formosa exported to Japan timber products valued at $537,533 (100 per cent of her exports, or 0.8 per cent of her total exports); and imported from Japan timber valued at $1,666,970 (95 per cent from Japan and 5 per cent from the Japanese colonies, or 3.5 per cent of her total imports).

Just as in the other colonies the State owns and manages the major part of the forests and engages in reforestation activities. A great deal of work is necessary in this respect. Before she became a

Japanese colony, her forests were considerably denuded by Chinese immigrants. Among other activities, the Japanese are planting teakwood and other tropical woods. This is very significant because the Japanese import a great deal of teakwood from the South Sea countries. Teak is a wood that is exceptionally well adapted to deck merchant ships, in addition to being an excellent wood for many purposes; and it is also one of the fastest growing trees up to a certain age (40 years).

Manchukuo

"Manchukuo's" contribution to the Japanese economic block must be considered, if this article is to give a comprehensive picture of the Japanese raw material situation in wood. When "Manchukuo" was declared an "independent" state, high hopes were entertained by the Japanese as to the valuable timber resources of that country and their possible exploitation. The World Lumber Digest (No. 140-2, 2/1/37) stated that "it is expected that substantial quantities of Manchurian wood will reach the Japanese market within several years but no important amount during 1937" and it added significantly that "continued attention is being manifested by Japanese importers in securing lumber and log supplies from areas other than the Pacific Northwest. Attention has been directed in particular to the Philippines and Netherland India." What could be "Manchukuo's" contribution and how soon?

In regard to the resources of "Manchukuo" it should be stated that so far they have been very little investigated and the data available are not very reliable. However, when compared with the other countries her stands are great. The area is estimated at 88 million acres or 35 per cent of the land area against 62 per cent in Japan and timber stands contain 130 billion cubic feet or 75 per cent more than in Japan proper. About a quarter of the area is covered with primeval forests, of which only 3.3 million acres are economically accessible (*Manchuria Daily News*, Semi-Monthly Issue, March 15, 1937). The forests of "Manchukuo" comprise a southern portion of the world forest belt, separated from the northern part located in the Far East by the Amour River. There are about 300 known species, of which there are 8 important coniferous and 21 broadleaved. As a rule broadleaved species predominate.

A successful solution of three economic factors—capital, labor, and transportation — are necessary to make Manchurian forests commercially exploitable and exportable. The Russians were first to cut timber in Manchuria on a commercial scale in connection with the Chinese Eastern Railroad which needed a considerable supply of ties, general timber, and fuelwood. There were also other Russian and Japanese concessions. Many attempts have been made to export abroad through the Chinese Eastern Railway. Other competitive interests were assumed to use the South Manchuria Railway. After the Russian influence was eliminated, there followed a period of confusion and uncertainty in the timber trade.

But, during the period of legal and illegal banditry, skilled labor — mostly Russian — was scattered, skill dissipated and the Chinese labor joined "patriotic" bands. According to the World Lumber Digest (No. 127, p. 3, 9/10/36) in order to solve the labor problem, the Japanese began to recruit lumberjacks and all kinds of lumber specialists to be sent to Manchukuo. The first party of 125 of the proposed 1,000 men to be sent over a ten-year period were to leave for Manchuria in February, 1936.

Logging in Manchuria is done through concessions of the "Manchukuo"-Japan companies operated under the supervision of the Department of Industry. The capital is provided by Japanese, though not in sufficient amounts. Therefore, the operations are far from supplying the demand for timber in the country.

The question of transportation has always been acute for the exploitation of Manchurian resources, because they are located in places where convenient rafting rivers are absent and railroad (already during the last five years about 200 kilometers have been built) and motor transportation would have to be provided. This is the main factor that has prevented in former times and still prevents today the exploitation of Manchurian forests for the international market in competition with the U. S. and Canada. However, this is highly academic since after seven years of "independence," "Manchukuo" with her enormous resources not only cannot export any timber to Japan, but is compelled to import substantial quantities to meet the needs of industrialization. In the last 2-3 years her unfavorable balance in timber trade has been not less than 100 million bd. ft. per year, imported mostly from Japan, Korea, the U. S. and the U. S. S. R. While at the same time, her insignificant exports went to Korea, China, and Japan.

In 1936, the country began also to reduce wood into pulp. The operations were supposed to begin in four plants with a capacity of 10,000 tons each, to be increased to 15,000 tons in the second year, so that the total Manchurian production in 1937-38 should be at least 60,000 tons. On the other hand, the Japanese expect at least 100,000 tons from this source. South Manchuria Railroad, Oji Paper Company and Mitsubishi are investing capital in Manchurian pulp industry. They are all engaged in experiments with soya bean stalks, rice husks, straw, marsh reed, bullrush, and Kaoliang as fiber raw materials. The S. M. R. Company is about to start manufacturing staple fiber which will be mixed with Manchurian wool in the ratio 3 to 7 for clothing for its own uses and those of the government.

Japanese Production, Consumption and Trade

The Japanese consume annually about 11 billion feet (log scale) of timber of all kinds, including pulpwood but excluding fuelwood (imported woodpulp is converted into pulpwood at 1,560 bd. ft. measure per ton). It is difficult to arrive at a correct figure for lumber production, since no data is collected on the sawmill output. The only official data available are by the Ministry of Agriculture and Forestry on timber felled. The above 11 billion feet include shipments from dependencies and imports from abroad but not the amount consumed in dependencies.

Is consumption of timber in the country a crucial problem for Japan? A general increase in national consumption seems possible in two directions; 1) an increase in national consumption with stable per capita consumption, and 2) an in crease in per capita consumption. The first increase would be the consequence of the growth of population. This will happen anyway as long as the population grows. On the other hand, there may or may not be an increase

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in per capita consumption depending on standards of living and the degree of industrialization. If the per capita consumption should increase considerably it might accelerate the growth of the national consumption by the correlation of population growth and per capita factor.

Judging by the last decade, the Japanese consumption in the future should increase on both accounts. Her present per capita consumption is 100 bd. ft. as compared to 90 in the United States (in 1934 the smallest ever reached by this country in a century). However, that an increase in per capita consumption is inevitable is shown by the relative wealth of the forest resources of the Empire in comparison with the lack of inorganic raw materials such as coal and iron; or with the lack of natural resources such as land and climatic conditions to develop the much needed fibrous raw material-cotton. The stimulation of rayon and staple fiber production by the compulsory mixing law will also increase the consumption per capita.

On the other hand, her rate of industrialization should also stimulate the consumption. England is a conspicuous example of such a tendency. The economic history of that country shows that the industrialization was accompanied by rapid growth of population and by increasing per capita lumber imports from 3.4 cu. ft. in 1843 to 11.1 in 1902 and 11.5 in 1927-30; (and in the past three decades of the 19th century there was a rapid increase in population and timber imports). However, England had been rich in coal and iron ore and produced only 5 per cent of consumed timber as compared to 75 to 90 per cent produced in Japan (Zon & Sparhawk, "Trends in World Wood Consumption," A National Plan in American Forestry, pp. 279-297). It cannot be said that this rule is general. In Europe for the past 25 years, in some of the countries the per capita consumption had slightly increased while in other countries it had decreased for no apparent reason and independent of the magnitude of resources. The pertinent question is where Japan can obtain the additional amount to meet her rising needs.

The certainty of larger demand for wood by the country as a whole is evident and this is irrespective of occasional emergency demands such as in 1923 or the one that is likely to occur in the reconstruction period after the present Sino-Japanese conflict is over. These emergency needs are likely to be covered by imports from abroad. The increasing demand, however, will be caused by the above mentioned factor of population dynamics and consequent demand for housing space. Of course, with the rapid advance in construction technic and materials used for house building, it would be difficult to forecast how much lumber would be required for that branch of industry in the next generation. It is known, however, that since the beginning of industrialization in Japan, there has been very little change in house-building habits, as far as the use of materials is concerned.

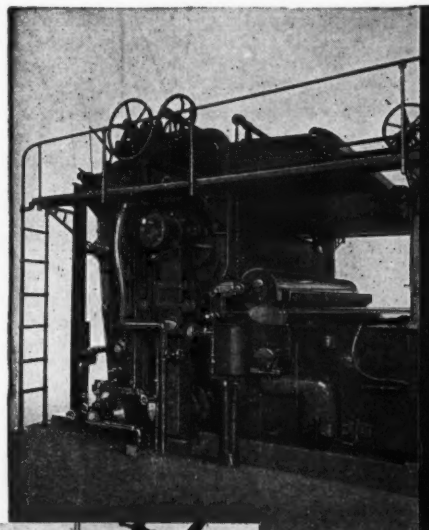
This phase of the Japanese existence, depending there as well as elsewhere, in the first place, upon natural and climatic conditions remained practically unchanged since the beginning of the industrial revolution, although some technical changes in construction have been made to fortify dwellings against destructive earthquakes and fires. Moreover, a substantial part of the population in Japan proper is living on the mainland between 31 and 37 degrees of N. Latitude, with no sharp differences in climatic conditions. This area has always been heavily forested influencing a historical development of one-story type (very seldom two stories) of frame dwelling, built chiefly of wood. Prof. Koji Fujii ("The Japanese Dwelling-House," Pub. at Tokyo, Japan, 1930) even claims that this type of Japanese dwelling is more conducive to "greater efficiency in life than a two storied one." For our purpose it will suffice to point out that the standard of Japanese wages hardly would allow the more expensive type of material such as bricks, stone, and cement to be used for the Western type of multi-dwelling (apartment) houses. On the other hand, there is no evidence that a cheaper construction material than wood has been or would be adopted by the Japanese to one-family houses. There is no possibility that Japan would assimilate earthen houses which are found in hot dry climates. In view of the above, a rapid increase in population will require timber for house building in larger quantities.

More than 50 per cent of the lumber is consumed in the building industry and the percentage is constantly increasing. (The U. S. comparative figure is 63 per cent plus 9 per cent for planning mills.) The number of new houses constructed annually has been estimated variously between 450,000 (Sakio Tsurumi, "Forestry in Japan," in American Forestry, January, 1920) and 700,000 (A. E. Bryan, "Lumber Market of Japan," Canada Commercial Intelligence Service, 1926). Other important avenues of consumption are mining, box material uses, shipbuilding, railroad ties, and telegraph and telephone poles and about one million metric tons of woodpulp for paper, rayon and staple fiber industry.

Japan proper contributes about 50 to 65 per cent of the consumption produced by clearing over 1,000,000 acres of forests (average for 1933-1935). During the last decade the area cleared has been increasing in proportion to the increase in production, by more than 25 per cent. In 1924 there were cleared 76,000 acres, in 1935 — 1,000,000 acres. In 1924 the resources were drained of 430 million cubic feet of commercial timber and 1903 million cu. ft. of fuel wood, in 1935 — 645 mill. cu. ft. and 1,870 mill. cu. ft. respectively. Thus for the last decade and a half the felling of commercial timber has increased by 1/3 and the production of fuelwood remained practically stationary. Thus the total drain in 1935 was 2,515 mill. cu. ft. or by almost 300 mill. cu. ft. more than the amount given by Raphael Zon in 1923 (Forest Resources of the World, p. 441). The analysis may be duplicated in regard to Sachalin, Korea and Taiwan, with the difference that relatively the ratio of fuelwood consumption to timber is higher in outlying possessions than in Japan proper and Hokkaido.

Fuelwood

It has already been indicated that 3/4 drain of wood is consumed as fuelwood. This has only a long term relation to the timber stands for industrial uses, but a much closer relation to pulpwood production where woodlots are utilized for firewood only. Evidently in circumstances such as this a choice should be made between the exploitation for fuelwood and pulpwood in places where forests are composed of acerose trees. As already mentioned, the average annual cutting of fuelwood for the last 15 years has been about 15 million cords (as compared to 61 mill. cords for the U. S.). Assuming there will be



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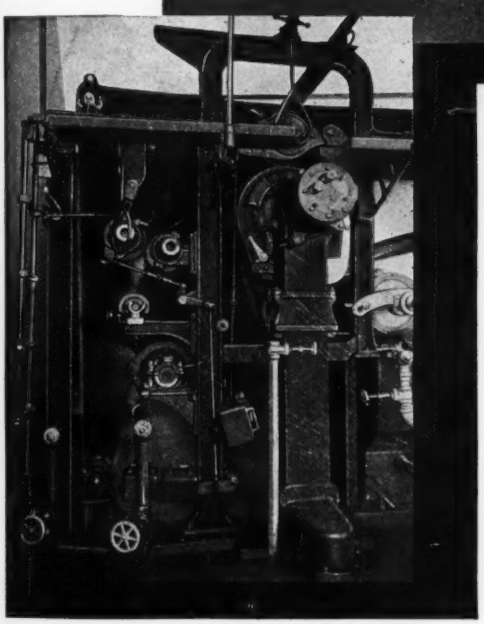

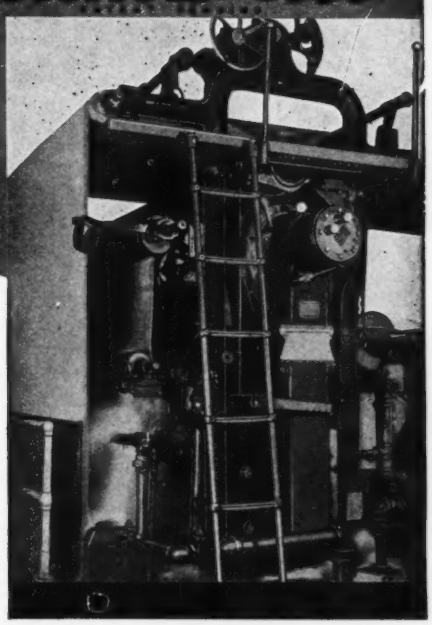

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a gradual shift from wood to fossil fuel such as coal, petroleum, natural gas, and peat in larger cities, fuelwood still will remain the chief fuel for agricultural Japan within a predictable future. It is, therefore, in serious competition in the wood market with pulpwood. Neither can we expect any sizeable increase in fuelwood production, if we assume that henceforth the exodus from agriculture into industry must increase.

Pulpwood

Dramatic achievements in rayon and staple fiber industry have opened new possibilities in wood consumption. Regrettably in this article it is out of place to elaborate on the subject of artificial textiles, expect to state their relation to timber requirements and forest resources. However, it is interesting to note in passing the neo-classical theoretic basis which the Japanese advance as a justification for the rise of the above industries, following the example set by Germany and Italy. Moreover, a full realization of the Japanese plans would adversely react on the cotton situation in the U. S. and elsewhere and will have repercussions on wool production in Australia. The scheme is very simple — Japan being a country lacking most of raw materials should develop those of her industries which will require raw materials obtainable to the largest possible extent within the Empire, or at least within the economic block under the control of the Empire.

According to the Japanese, they have, relatively speaking, all favorable factors necessary to create a great rayon and staple fibre industry. In regard to the first named, it has been realized. In case of staple fiber, great advances have been made for the last three years; its production has increased from 2.5 million pounds in 1934 to 13.5 million in 1935 and 40 million in 1936. Advantages which they claim to have are: domestic manufacture of textile machinery and the ease with which cotton and woolen plants could be adapted to manufacture mixed cloth; possibility of achieving self-sufficiency in raw material (which in rayon and staple industries is 30 per cent of the cost and increasing utilization of spruce, fir, and larch resources of Sachalin, Hokkaido and possibly "Manchukuo"; domestic manufacture of chemicals for the treatment of cellulose; availability of water resources of necessary quality; and the last but not the least, low labor cost and water power. (Japan Trade Review, February, 1937, p. 32.)

The Japanese began to produce artificial textiles in 1924. In 1936 they overtook every important producing country in the world, including the U. S. They have also made tremendous gains in paper and staple fibre manufacture. These industries depend to more than 90 per cent on woodpulp as raw material, necessitating imports in increasing quantities. This means larger international payments for woodpulp, partly at the expense of payments for wool and cotton, with a hope that eventually Sachalin, Hokkaido, Korea and Manchukuo will be able to supply the necessary quantity thus obviating international payments completely.

The present yearly consumption of woodpulp in Japan is about 1,300,000 metric tons distributed as follows: 1,000,000 metric tons consumed in paper industry and 300,000 metric tons in rayon and staple fibre industry. Of the above amount the country imported in 1937 — 477,897 metric tons, most of which was consumed in rayon making. Converted into pulpwood on the basis of 1,560 bd. ft. of wood per metric ton of pulp, it indicates that the Japanese consumed in 1937 — 2,028 million bd. ft. of timber in these industries; of this amount 745 mill. bd. ft. were imported, about 50 per cent of it from the U. S. According to a tentative national plan drawn by the State Planning Board, the pulp production is expected to reach by 1942 — 1,800,000 metric tons requiring 2,808 million bd. ft. Thus the present consumption of wood for pulp is 20 per cent of the total timber consumption in Japan (excluding fuelwood) and will be over 25 per cent in 1942. Obviously, since the dynamics of pulp consumption will grow at a higher rate than timber consumption for all needs, this will be at the expense of domestic production or imports.

The above analysis should be contrasted with the timber imports and their part in total consumption. Japan, because of her position in the Far East, has always been the largest dealer in the timber trade of the Western Pacific. From 1868 to 1921, Japan had consistently a favorable balance of payments in timber trade. Since 1921, she has become a substantial timber importer; exports kept growing but at a much slower rate than imports. Among other imports, timber never played an important part, except in shipping space (Merchant Marine) as is evident from the table below giving data for the the last four years. Since 1929, imports have declined considerably from the high level reached in the decade 1921-1930. On the other hand the relative position of woodpulp imports has been steadily increasing.

Relative importance of timber and woodpulp imports to the total imports and raw material imports. (Total imports 100 per cent.)

	1933	1934	1935	1936	Jan. to Oct. 1936	Jan. to Oct. 1937
All Raw Materials.	63.3	61.3	61.0	62.9	62.9	55.0
Timber	2.1	1.8	2.0	2.0	2.0	1.7
Woodpulp	1.4	1.9	2.2	2.4	2.4	2.9

Source: Japan Trade Review, Jan. 1938, p. 44.

A study of quantity index numbers of principal commodities imported published by the Institute for Commercial Research of the Kobe University of Commerce, shows that only one other commodity — crude rubber — has reached a higher index number (Base 1913 — 100) in the last two decades than imports of timber and lumber; the only other comparable situation was the recent rapid growth in imports of woodpulp. It should be noted also that whereas the demand for rubber has been increasing steadily, the imports of timber have grown by sudden spurts and the decline since 1929 has been almost catastrophic, from the highpoint of 5,696 in 1928 to 2,210 in 1935. Consequently the import index numbers could not be reliably used to forecast the future imports of lumber.

Just as in 1920, when (the wholesale price was 388, Base 1,900, the highest ever reached) high prices for domestic timber opened the gates for a flood of imports, so in 1930, low prices caused a sudden drop in imports and for the last six years the average amount of lumber imported has been 630 mill. bd. ft., just about half the average annual amount brought in during the decade of 1922-1931.

In percentages of consumption, the imports have fluctuated between 10 and 25, although the Mitsubishi Research Bureau claims the country to be almost

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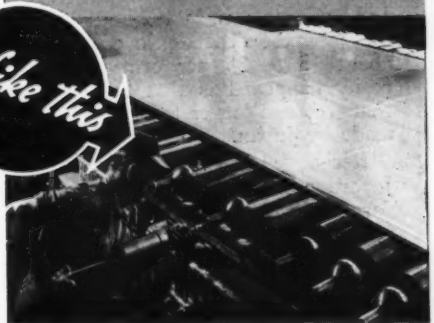

The Gulf grease being applied here to wet-end roll bearings stays in the bearings and does not work out along the rolls.

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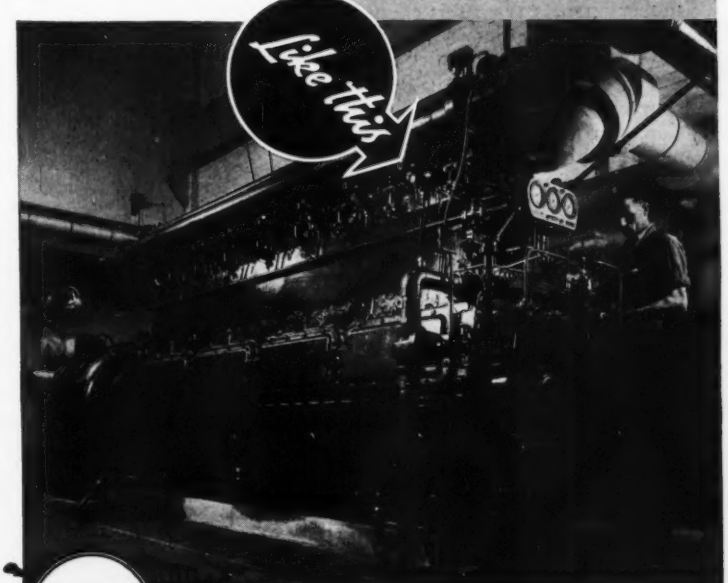

This modern mill reports high operating efficiency from this Diesel engine with Gulf lubricants and fuel oil in service.

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self-sufficient in timber resources (Class B, 90-100 per cent).

Imports of timber, lumber and woodpulp (in million bd. ft. x 1000 yen) and Exports of timber (value only):

	1	2 Quantity	3	4	5	6
	Timber and Lumber Imports	Index No. of Lumber Imports	Woodpulp Converted into Pulpwood at 1560 bd. ft. per met. ton	Timber and Lumber Imports	Pulp Imports	Timber and Lumber Exports
1913	30.4	100	75.4	2617	4620	10043
1918	70.4	375	45.7	12271	6835	17804
1923	996.4	3292	56.7	89521	6333	12258
1929	1316.0	4520	125.4	88837	13485	21138
1930	1094.0	3480	129.0	53087	12084	14622
1931	946.8	3209	157.0	43379	11840	9953
1932	663.6	2227	157.8	35029	15328	11328
1933	617.0	1920	249.6	40584	27066	18637
1934	502.0	1621	351.5	40183	44255	23119
1935	639.7	2210	421.1	49775	55101	23182
1936	672.6	2211	510.9	55548	67107	24703
1937	846.0	2454	745.5	64817	116720	35512

This statement is not in accord with the data in the table above when woodpulp imports are added to all other timber imports; not only the quantity of wood imported has not decreased from the decade of 1922-1931, but on the contrary in 1937 the quantity of wood imported was about 1.6 billion bd. and thus has passed the previous record of 1928 quantity of 1.5 billion bd. ft. However, in value the difference was much larger. In 1928, it was 122.5 million yen, in 1937—180.5 million yen. Thus the Japanese dependence on imported wood is still about 15 to 25 per cent of consumption. What really happened is that the structure of the trade changed, and larger total international payments are made by Japan.

It changed in two respects. On the one hand, the Japanese imported more logs and sawed timber than formerly; thus providing more work for the domestic sawmills. On the other hand, by importing a great deal of timber in the form of pulp which has undergone considerable fabrication abroad, payments for it have become much larger than they would have been for equal weights in rough timber. This situation is not without irony in view of the Japanese efforts to become independent of timber imports from this country. It also resulted in shifts in U. S. sales to Japan from cotton to woodpulp with all its implications for U. S. foreign trade.

The change in distribution of trade among various countries is also not without interest in this discussion. In timber imports a most important development has been a partial shift of trade from the Pacific Northwest to the South Seas countries. Imports from Malayan Archipelago and the Philippine Islands have been increasing even during the depression, in contradistinction to the diminution of imports during the same period from the Pacific Northwest and drying up of the Soviet Union trade (except a small quantity from the Northern Sachalin). Another change has been an added emphasis on imports of round logs, squared timber and undressed lumber. All these changes were accomplished without any unusual state intervention, except in the domain of tariffs and since 1931 in financial manipulations, which, however, did not interfere with the legitimate international trade relations. On the other hand, it is clear that whatever was done in the way of intervention was in a sense basis for the present Economic Planning in the procurement of raw material.

JAPANESE IMPORTS OF THE SOUTH SEA AND THE PHILIPPINE LOGS AND LUMBER IN 1926-1937

(in 100 bd. ft. and 1000 yen)

	SOUTH SEA		PHILIPPINE ISLANDS	
	Volume	Value	Volume	Value
1926	19200	1668	11120	610
1927	23760	1977	18995	1090
1928	27693	2437	19945	1144
1929	42678	3559	31955	1521
1930	38531	2676	25426	904
1931	47521	2784	35798	957
1932	47509	3322	36020	1282
1933	92132	4306	49888	1535
1934		4539	77772	2421
1935		6286	88639	2693
1936		8190	129210	7229
1937		8778		11260

Source: South Seas-Oriental Economist 1934, p. 46; Philippine Islands Annual Reports, Insular Collector of Customs (compiled by U. S. Tariff Commission, Table 62, p. 152); Japan, Finance Department, Monthly Returns of Foreign Trade, December 1935, 1937.

JAPANESE TIMBER IMPORTS FROM VARIOUS COUNTRIES IN PERCENTAGES OF TOTAL VALUE
1929-1935

	U. S.	Canada	U.S.S.R.	Other*
1929	76.5	6.2	12.5	4.8
1930	60.0	13.0	17.0	10.0
1931	60.7	18.0	14.0	8.3
1932	58.0	20.9	10.0	11.1
1933	58.5	19.0	6.0	16.5
1934	51.0	24.4	1.5	23.1
1935	51.7	16.8	2.9	22.6

* China, Siam, Philippines, Netherland, India, etc.

WOODPULP, 1929-1936

	U.S.	Canada	Norway	Sweden	Other
1929	17.3	34.3	24.3	11.0	13.1
1930	6.9	45.0	30.0	7.7	10.4
1931	20.5	43.7	17.4	10.3	8.1
1932	25.9	20.5	26.9	11.6	15.3
1933	29.0	22.4	28.0	13.2	7.4
1934	36.8	16.3	23.8	16.8	6.3
1935	41.3	10.9	23.9	14.0	9.9
1936	47.5	6.2	22.0	14.5	9.8

Source: Far Eastern Survey, Vol. VII, No. 8, April 20, 1938.

JAPANESE IMPORTS OF AMERICAN (U.S. & BR. COLUMBIA) LOGS AND LUMBER IN 1932—1936, BY PORTS

(Logs in 1000 ft.)

Received at	1932	1933	1934	1935	1936
			Logs		
Yokohama, Tokyo	70298	68331	81025	90974	103187
Nagoya	4883	8441	10908	10313	12336
Osaka	109167	144162	123671	148602	179727
Kobe	7589	6946	5335	7760	12671
TOTAL	191937	227855	220841	258670	307920
			Lumber		
Yokohama-Tokyo	93803	74420	58184	52543	67420
Nagoya	48933	59229	45977	51686	33497
Osaka	101560	109708	111270	111103	102555
Kobe	16518	9650	7076	5634	3820
TOTAL	260813	253259	222607	219749	207288

Source: The Timberman, March 1937, p. 98.

The Planning Board, composed of the representatives of various ministries—Commerce and Industry, Finance, Home, Agriculture and Forestry, and the Overseas Office, has as its primary function the determination of major economic policy, particularly in respect to investment flow (control of the credit) and allotment of import quotas for raw materials. This last is done through a control board in each industry. In forestry and timber trade policy there have been crystalized in the last few years four conspicuous trends, which, it will be the task of the Planning Board, to define in order to determine policies to pursue. They are in the main — to develop the Empire resources to a maximum state of productivity and utilization as a necessary condition for self-sufficiency, an ultimate goal; to limit American imports to a minimum necessary quantity; to buy timber in stumpage where there is a danger of monopolistic foreign control of timber stands abroad; and to develop pulpwood plantations notably in the South Seas through concession policy.

The first point has been covered adequately except in some particulars which will be discussed here. It is necessary to indicate that the Japanese have in a sense discarded their natural reticence and indulged

in extravagant claims in regard to the possibility of becoming independent of woodpulp imports; some say in 4-5 years; others forecast self-sufficiency in a half century. Where does Japan really stand in the matter? Above, it has been estimated that present consumption is 11 billion bd. ft., increasing annually at a rate of ½ billion ft. per year, divided between 300 mill. for pulping and 200 million bd. ft. from increase in housebuilding and other uses. In order to become self-sufficient the country has to find a substitute source for the present imports of 1.6 billion bd. feet, plus an annual increase of ½ billion bd. ft. in consumption. This the Government proposes to do by more intensive exploitation of the resources available in the Japan-Manchukuo Economic bloc.

The forest resources in Japan proper and particularly national forests in the six provinces of Tohoku (Northeast) and Fukushima prefecture, an area of 6,000,000 acres (65 per cent of national forests in Japan Proper) will have to be the center of logging operations to supply wood for pulp mills. The *Japan Times* editorial (3/2/38) deplores this new forest policy, saying " . . . as any one who has seen the map of Tohoku district knows, the district is mountainous, and the rivers running from the mountain often cause floods. The densely forested mountains protect the farms, houses and people of the Tohoku district against greater flood damage." The representatives of the Ministry of Agriculture and Forestry on the Planning Board also strongly opposed commercial exploitation, of these Protective forests. The Ministry of Finance's rejoinder to this opposition in the Planning Board was " . . . that flooding consequent upon the felling of trees can be prevented by proper methods with a part of the money raised from selling the timber and that flood prevention depends upon technique." (Carl H. Boehringer, Assistant Trade Commissioner, U. S. Department of Commerce, Tokyo — "The Japanese Pulp Situation," *Pacific Pulp and Paper Industry*, February, 1938). However alarmistic the Times' viewpoint may seem, it is obvious that in Japan (just as in Germany) the forest policy of exploitation based on the sustained-yield principle has been modified under the pressure of economic necessity in favor of more intensive utilization of resources. However, it should not be implied that commercial exploitation cannot be adapted to protective forests. The over-mature timber stands should be cut to save them from decay and economic waste no matter where they are situated. The question is one of specific conditions of exploitation and reforestation. The same policy is to be expected all over Japan proper and dependencies. This policy of freer exploitation certainly cannot lead to a balanced timber economy, not in the near future anyway.

The point of woodpulp imports from the American Northwest has already been covered; it remains to be said that were the Japanese able to procure any other source of woodpulp the American Northwest would be the first sufferer and the decline of imports from that source would be as swift as that of lumber. In regard to the stumpage ownership abroad, notably control of about 2 billion feet of timber stands in British Columbia (The Queen Charlotte and Vancouver north end of Vancouver Island — 600 mill. ft.; and in the vicinity of Cowichan Lake — 200 million ft. *Pacific Pulp and Paper Industry*, July, 1937, p. 5) was obtained as a result of speculative buying, based on the exaggerated fear of an imminent shortage of pulpwood resources of the world. This supply is supposed to be utilized during the transitional period, while the Japanese are developing their own Empire resources. It is estimated that it will last a decade and to that extent is a welcome addition to the Japanese resources, providing the British Columbia Provincial authorities and Canadian government do not raise any obstacles in the form of taxes or export duties, thus making their exploitation very expensive. This timber, of course, will be exported in the form of log for pulp and lumber at a rate about 200 mill. ft. per year.

Finally, the Japanese have obtained concessions for afforestation purposes in the South Seas. The most conspicuous examples of these are in the Sangkoelirang Bay District of Netherland India, British Borneo, and the Philippine Islands. They are obtained usually as timber concessions and after clearing are developed into afforestation areas. This is an entirely new development in the economic expansion of Japan, conditioned by the rise of woodpulp consuming industries. As the above names suggest, they are obtained mostly in the tropics. The main idea behind it is to grow pulping species in the shortest possible time, in the most favorable physiographic conditions. The whole thing is in an experimental stage and results will not be known until 1945 at least.

Harold L. Curtis to Be Sales Manager

Appointment of Harold L. Curtis as sales promotion and advertising manager of the Shell Union Oil Corporation was announced today by L. T. Kittinger vice-president-marketing of that organization. Mr. Curtis is replacing Fred C. Foy who has resigned to become vice-president in charge of eastern sales for Wilding Picture Productions, Inc., with headquarters in New York City.

Mr. Curtis, who was manager of the Metropolitan New York division of the Shell company, brings to his new position a wealth of field experience in merchandising and sales promotion in the petroleum industry. He has been connected with the Shell organization in various capacities for the past fifteen years, and will take up his new duties June 15.

Donaldson B. Thorburn will continue as assistant advertising manager with headquarters in New York City.

Harry J. Underwood formerly division manager at Philadelphia is replacing Mr. Curtis as manager of the Metropolitan division.

Paper from Coconut Husk

A Madras scientist according to the American Consulate General at Calcutta met the Coconut Board on November 19 and claimed to be able to produce a brown pulp from coconut husks which could easily be bleached. He declared that the 10,000,000 acres of coconut plantations in India and Ceylon could supply the world with a cheaper and better paper. According to his scheme, husk worth 2 rupees ($0.74) would produce paper worth 24 rupees ($8.88). He requested assistance from the Coconut Board to complete his researches, and it is reported that he may be asked to explain his scheme before a joint meeting of the Coconut Board and the Coconut Research Board.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Richmond, Va.—The Dixie Container Corporation, Richmond, organized to manufacture corrugated paper boxes and containers, has concluded negotiations for lease of portion of local plant of American Locomotive Company, Seventh and Hospital streets, totaling about 50,000 square feet of floor space, and will take over at once for new plant. Buildings will be remodeled and improved, and equipment installed for large output, approximating about 15,000 tons of finished containers per annum. A boiler house will be built for service at plant, which is scheduled to be ready for operation during the summer. Charles A. Felvey is vice-president of company, in charge.

Savannah, Ga.—The National Gypsum Company, 190 Delaware avenue, Buffalo, N. Y., manufacturer of wall board, insulating board and kindred products, is said to have concluded arrangements for acquisition of large tract of land in the Port Wentworth district, Savannah, as site for proposed new mill, to which reference recently was made in these columns. The site has extensive waterfront facilities, where wharves and docks will be built to accommodate ocean-going steamers and freighters. New mill will comprise several large one and multi-story units and will be given over to the production of wall board and allied specialties. A power house, machine shop and other mechanical departments will be built. Company has arranged a fund of about $900,000 for new mill, through sale of a bond issue of $3,500,000, now in progress, and proposes to begin work on plant at early date.

Newark, N. J.—The Weisman Paper Company, 54-56 Clinton street, dealer in coated and other paper stocks for the printing trades, has arranged for a lease of a section of large building at 152 Mulberry street, near Hamilton street, totaling about 13,000 square feet of space, and will improve and equip for early occupancy. The structure was used previously by the Westinghouse Electric & Manufacturing Company and will be given over to storage and distribution, as well as company headquarters by the Weisman company, which will remove to new location at early date and increase present facilities. Arthur Weisman is president.

Brooklyn, N. Y.—William W. Fitzhugh, Inc., Fourteenth avenue and 37th street, Brooklyn, manufacturer of paper labels and other paper specialties, has concluded arrangements for a lease of a series of nine buildings at the local Bush Terminal, totaling about 70,000 square feet of floor space, and will occupy for expansion in paper-converting plant. Alterations and improvements will be made by the Bush Terminal Company to meet the requirements of the converting plant, including the development of a private railroad siding for ten cars, to serve the Fitzhugh company exclusively. Plans for the improvements have been drawn by William Higginson & Son, 101 Park avenue, New York, architects, and work will be pushed to early completion. The Fitzhugh company also operates paper-converting plants at New Haven, Conn., and Ridgefield Park, N. J.

Brevard, N. C.—The Ecusta Paper Corporation, 345 West 40th street, New York, N. Y., recently organized to manufacture cigarette papers, has awarded general erection contract to the Fiske-Carter Construction Company, Greenville, S. C., for proposed new mill in Brevard Township, Transylvania County, N. C., where tract of about 225 acres of land, fronting on the Davidson River, recently was acquired, as noted in these columns. Preparation of a portion of the site will be placed under way at once and building construction is expected to begin early in the summer. New mill will consist of a group of 13 one and multi-story buildings, including pulp mill, digester building, paper mill, raw and finished material storage buildings, pumping station, power house, machine shop and other miscellaneous units. It will have facilities for the employment of about 300 persons and is estimated to cost close to $2,000,000, with equipment. Harry S. Straus is president of the new company, which will be affiliated with the Champagne Paper Corporation, first noted address, as well as the Papeteries Rene Bollore, with mills for cigarette paper production at Odet and Cascadec, France, and the Papeteries de Champagne, with mill at Troyes, France, for similar paper manufacture. J. E. Sirrine & Company, 215 South Main street, Greenville, S. C., are consulting engineers for the new Brevard mill.

Green Bay, Wis.—The Northern Paper Mills, Inc., manufacturer of tissue and other paper stocks, is awarding additional contracts for its new steam-electric power plant, on which active work is now being placed under way, previously referred to in these columns. An award for structural steel framing has been made to the Worden-Allen Company, Milwaukee, Wis., and for reinforcing steel to Joseph T. Ryerson & Son, Inc., Chicago, Ill. The Baker Construction Company, Green Bay, is general contractor for the work, which will consist of a two-story structure, 100 x 100 feet, with stack. New station will represent an investment of about $750,000, with equipment, and is scheduled to be ready for operation by the close of this year. Sargent & Lundy, Inc., 140

South Dearborn street, Chicago, is consulting engineer.

Bogalusa, La.—The Louisiana Boganite Corporation, Bogalusa, is having plans prepared by the Earl Engineering Company, Whitney Bank Building, New Orleans, La., consulting engineer, for its proposed new clay refining plant for the production of special clays for use as a sealing agent in the manufacture of wall board and allied products, recently referred to in these columns. New plant unit will be one-story, 40 x 350 feet, for refining operations and storage and distribution. It will be equipped for a capacity of over 12 tons per hour of refined clays.

Newcastle, Australia—The Masonite Corporation (Australia), Ltd., affiliated with the Masonite Corporation, Laurel, Miss., manufacturer of insulating board products, pressed board specialties, etc., is pushing erection of new mill at Raymond Terrace, near Newcastle, New South Wales, recently referred to in these columns, and plant is now scheduled for completion in September, when it will be placed in service at once. Considerable machinery has been purchased in the Uniited States for the plant and is now being landed at plant site. The new mill will represent an investment of about $450,000, with equipment, and will be developed for large capacity. Arrangements have been made for timber supply for pulp wood manufacture in the immediate vicinity. F. W. Pettingell is company engineer in charge of construction.

New York Mills of I. P. Sign Agreement

GLENS FALLS, N. Y., May 31, 1938.—A meeting held last week at the South Glens Falls plant of the International Paper Company, resulted in the signing of a union agreement between the bond and book division and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers. The agreement covers the mills of the concern at Fort Edward, Palmer, Niagara Falls, Tonawanda and Livermore Falls, Maine. Announcement was made that there were no changes in the present wage rates.

A meeting of the Fort Edward branch of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, was held early last week at which there was a discussion of the renewal of the wage agreement with the International Paper Company, which expires June 1. Speakers at the meeting included John P. Burke, president of the International organization, Floyd Van Deusen, of Corinth, and Frances Weissfeld, of New York City.

To Make Paper Cups at Brockton

BROCKTON, Mass., May 31, 1938—The Dimou-Vail Paper Products Company has opened a plant for the manufacture of paper cups and containers at 14 Florence street. The company was recently organized by James D. Vail and S. L. Dimou, both of Brockton, and well known through other business interests here.

Although offers were made to locate the business elsewhere, the owners preferred to keep it in Brockton. The new plant, at present employing nine people, is equipped with specially-designed automatic machinery. In addition to supplying local requirements, the company is making shipments to the New York and Chicago markets, and is said to have orders on hand enough to take care of production for some time to come.

EMPLOYMENT IN PAPER INDUSTRY

(Continued from page 13)

progress in industrial safety, although a long and difficult process of continuous education and concentrated effort, has borne fruit.

Nekoosa Independent Union

The Nekoosa-Port Edwards Labor Union, an independent union of employes of the Nekoosa-Edwards Paper Company, Nekoosa and Port Edwards, Wis., has no intention of disbanding because of the report of the National Labor Relations Board in which the company was ordered to disestablish the union as a representative for collective bargaining. Instead, the organization has appointed a committee of four to study possible affiliation with the National Federated Independent Unions with headquarters at Indianapolis, Ind.

At a meeting of the independent union, following the report of Henry J. Kent, trial examiner, Attorney James C. Dutton explained the conclusions reached to the effect that the company was interfering with AFL unions. Mr. Dutton declared that despite refusal of the Wisconsin Labor Relations Board to recognize the independent union as a bargaining agency, the federal report was in fact a victory with respect to the contention that they are a labor organization within the meaning of the Wagner law. The independent union was an intervening party at hearings conducted at Wisconsin Rapids in February on AFL charges.

Movement of Pulp Wood Begins

Movement of pulp wood by raft across Lake Superior from Canada to the port at Ashland, Wis., has been started for the season. The tug Butterfield of the Newaygo Tug Line, Inc., is picking up a raft on the Canadian side now and will bring it into port early in June for the Consolidated Water Power and Paper Company. It has already conveyed one raft to Munising, Mich. Several shipments will be brought to Ashland this season, where a large crew with hoists will reload the wood for rail shipment to the mills.

Pulp wood also is being brought to the Kimberly-Clark Corporation's dock at Green Bay, Wis. by barge from Canada, for reshipment to mills in the Fox River Valley. The barge Merle H. of the Pigeon Lumber Company, Fort William, Ont., damaged a bridge at Green Bay last week when it broke loose from the tug Guardian, of Montreal, after unloading a cargo. The damage to the barge was not extensive enough to disable it.

Paper Mill at Leesburg, Fla., Burned

LEESBURG, Fla., May 30, 1938—Fire of unknown origin completely destroyed the plant of the Grass Fibre Pulp and Paper Company on the night of May 17.

Erected in 1920 at a cost of more than half a million dollars, for the purpose of manufacturing paper from saw grass growing in the nearby lakes, the plant had been out of operation since about 1923.

While a fine grade of paper was manufactured, the harvesting of the sawgrass proved too difficult and costly a procedure and the attempt was abandoned.

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COMING EVENTS IN THE PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Fall meeting, Northland Hotel, Green Bay, Wis., September 8-10.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATE SECTION, Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILLS SUPERINTENDENTS ASSOCIATION. Annual meeting, Royal York Hotel, Toronto, Ont., June 22-24.

CONFIDENCE AND RECOVERY

Confidence is an act of confiding, belief, trust, and when the opposite state of mind exists, as it is quite generally conceded to be the case today, men are cautious, doubtful and lacking assurance in the security of the future they hesitate, when in normal times action is promptly and energetically transmitted into practical accomplishment. This is applicable to many activities but it is particularly true in respect to commercial enterprises of all kinds. Cooperation between the Federal Government and industry and trade is the greatest need of the present. But unification of opinion and coordination of activity of industry with the current policies of the Roosevelt Administration has so far failed because industry and trade has little confidence in the attitude, policies and forms of legislation which have come from Washington.

Fear retards business recovery. At a press conference on April 6, Daniel C. Roper, Secretary of Commerce, said in part: "Psychology plays a large part in the degree of spending for consumption. Unreasoning fears, engendered by criticism of our processes of democratic government, have undoubtedly contributed to the recent decline in industrial activity, with resulting increase in unemployment to such an extent as to give us concern.

"When this great family of 50,000,000 workers—sensitive because of their close interdependability—become disturbed, they reduce their spending to the necessitous minimum. Then inventories pile up; prices decline; values are sacrificed; workers become idle and profits vanish. So today, with fundamentals substantially unchanged, we see the abnormal result of lack of faith and confidence—nearly one-fifth of this great family of workers denied normal activity largely because of unjustified fears."

Few will deny that Secretary Roper was right as far as he went but, unfortunately, he made no attempt to explain the cause of this lack of confidence and why the management of business enterprises have so little faith in the policies of the Roosevelt Administration. Had he explained the principles underlying the economic, social and monetary policies now in effect, it would seem inevitable that Mr. Roper must have shown how far the Roosevelt Administration has departed from the processes of democratic government hitherto considered essential for the welfare of the country. In a just consideration of the question of the Administration's policies and the divergent opinions of business, it is first necessary to determine if the fear of business men is or is not justified. From any practical viewpoint the debt piled up by the Roosevelt Administration, the huge loss to management and labor through strikes and the inability of the National Labor Relations Board to function as it should, oppressive forms of taxation with many restrictions imposed upon business and threats of more drastic regulations to come, are not properly psychological but are realties and form actual obstacles in the path of business today and must be removed to insure recovery.

Severe criticism of the Roosevelt Administration was expressed at the concluding session of the Illinois Bankers Association, held at Springfield, Ill., May 24, by congressional, business and farm leaders. Senator Edward R. Burke of Nebraska, stated that the single element needed to bring about business recovery is a feeling of security on the part of business men. The policies that have contributed most to the paralysis of business enterprise, Senator Burke said, were the labor policy under the Wagner Act and the government's competition with business, chiefly in the utility field.

"The Federal Government," Senator Burke said, "in the last five years has spent something like $40,000,000,000, about half of it borrowed money added to the national debt, the principal and interest on which must sometime be paid—by ourselves or our children. Beyond that, the record shows that the business institutions of the country in the same period paid out of their accumulated reserves about $20,000,000,000 in excess of their earnings in the effort to keep men at work and the wheels moving. Before long these reserves will be exhausted. The road to recovery must be found, and without delay."

In touching upon the labor situation, Senator Burke said that the operation of the Wagner Act had brought about a breakdown of the normal relationship between employers and workers. "It is my belief", he said, "that the country is rapidly awakening to the realization that we have let the matter of proper labor relations get out of hand. Because of defects in the Wagner Act itself, and more especially in its administration, it has been a potent force in vastly increasing labor disputes. There must be a restoration of good will, mutual respect and confidence between those who work in mill and factory and those who provide the capital and management necessary to make such a venture succeed."

As spokesman for the smaller business men, D. D. Emery, president of the National Small Business Men's Association, said in part: "Government competition in business is like crab grass in your lawn. If you do not check or kill it soon you will have no lawn. As the crab grass slowly chokes out the grass, so does government in business gradually strangle business." Mr. Emery pointed out that government competition started modestly and innocently, but by degrees has grown to huge proportions. He said that his organization represents an attempt to make the influence of the small business men felt in national affairs, which influence, he said, is greatly needed if the country is to follow a wise economic course. The convention adopted a declaration of policy condemning the Federal Government's spending policy and advocated a system of direct cash for the idle as a measure of economy.

C. A. Grondona Goes to New York

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., May 30, 1938 — Charles A. Grondona, since 1932 resident manager of the National Paper Products, local division of the Crown-Zellerbach corporation, received last week notification of his promotion to the New York office, eastern headquarters for the concern.

He will be succeeded by Peter T. Sinclair, who also will retain his position of resident engineer, according to the announcement from A. B. Lowenstein of San Francisco, Cal., vice-president of the corporation.

Mr. Grondona will leave Carthage to begin his new duties in New York at the end of June. There he will have "remote control" supervision over the local plant and also will be assigned other work in connection with the corporation itself. Mr. and Mrs. Grondona and son, Charles, Jr., 7, and daughters, Nancy, 3 and Susan, nine months, who now reside at 905 State street, will make their home in New York.

A graduate of the school of engineering, Stanford university Mr. Grondona became associated in 1928 with the technical department of the pulp and paper mill of Port Townsend, Wash., another division of the Crown-Zellerbach corporation. He was located there four years before coming to Carthage. Mr. Grondona is a native of San Francisco Cal.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Months	1938(c)	1937(c)	1936	1935	1934
January	63.9%	90.3%	76.1%	65.8%	.....
February	68.7%	90.1%	77.9%	70.0%	.....
March	69.6%	90.3%	76.0%	70.5%	.....
April	67.9%	92.1%	82.3%	70.0%	.....
May	.....	90.6%	81.6%	69.4%	.....
June	.....	87.3%	80.7%	72.3%	.....
July	.....	81.8%	77.3%	64.9%	.....
August	.....	82.9%	81.5%	70.9%	.....
September	.....	78.6%	80.5%	71.9%	58.2%
October	.....	73.5%	87.6%	75.6%	64.7%
November	.....	61.9%	88.0%	75.3%	61.7%
December	.....	54.5%	85.9%	71.2%	59.6%
Year Average	.....	80.6%	81.3%	70.5%	.....
First 20 weeks	67.7%	90.6%	78.8%	69.0%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1938		CORRESPONDING WEEKS, 1937	
*April 16	67.3%	April 17	93.3%
*April 23	66.9%	April 24	90.9%
*April 30	70.1%	May 1	91.6%
*May 7	66.3%	May 8	89.5%
*May 14	68.7%	May 15	90.9%
*May 21	69.3%	May 22	91.2%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks					
Ratio Limits	Apr. 16, 1938	Apr. 23, 1938	Apr. 30, 1938	May 7, 1938	May 14, 1938	May 21, 1938
0% to 50%	94	114	101	105	88	68
51% to 100%	216	195	209	199	206	155
Total Mills Reporting	310	309	310	304	294	223

* Subject to revision until all reports are received.
(c) Basic capacity data have been adjusted to correspond with ratings reported by individual companies.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch Hours", were as follows:

Mos.	1938 (e)	1937 (e)	1936	1935	Mos.	1938 (e)	1937 (e)	1936	1935
Jan.	55%	80%	61%	61%	July	....	67%	69%	59%
Feb.	61%	86%	67%	67%	Aug.	....	74%	75%	65%
Mar.	60%	87%	68%	67%	Sept.	....	70%	76%	69%
Apr.	....	89%	70%	61%	Oct.	....	66%	82%	76%
May	....	86%	68%	61%	Nov.	....	56%	79%	70%
June	....	75%	68%	65%	Dec.	....	46%	74%	60%

Week end. Apr. 16, 1938—58%
Week end. Apr. 23, 1938—54%
Week end. Apr. 30, 1938—59%
Week end. May 7, 1938—57%
Week end. May 14, 1938—56%
Week end. May 21, 1938—58%

(e) Basic figures revised to include new members of the National Paperboard Assn.

Terminate Working Agreement

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, May 31, 1938.—Notice to terminate the existing working agreement between local paper manufacturers and members of the three locals of the International Brotherhood of Papermakers becomes effective today, the manufacturers having availed themselves of the privilege to terminate following a thirty-day notice and at the expiration of the agreement.

Negotiations for the new contract have been going on for more than a month and will continue. The manufacturers seek a new contract embodying a wage reduction and the end of the preferential shop. The unions stand on their minimum demands for a continuation of wages and conditions as they were in the contract now running out.

The manufacturers are represented by Labor Relations Counsel Adam Wilkinson, formerly exclusively employed by the American Writing Paper Corp., but who has acted as counsel for the manufacturers through a number of contract negotiations.

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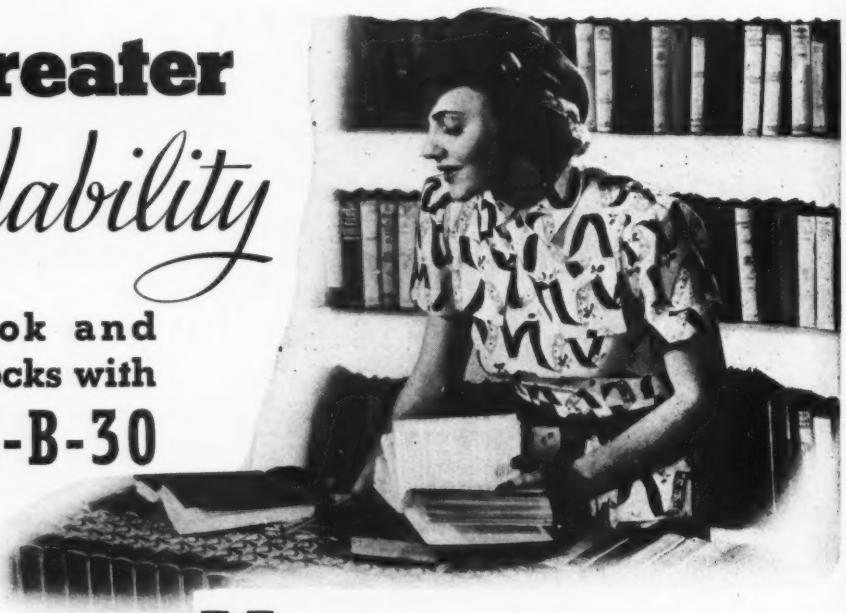

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TITANOX B-30 is pure titanium dioxide in combination with barium sulphate (blanc fixe). It has a higher refractive index than any commonly used paper pigment. Its use permits employment of lighter weight sheets, without loss of opacity, thereby making for reduced cost of printing and mailing.

TITANOX-A (pure titanium dioxide) is recommended for papers where pigmentation must be held to a minimum, and also in combination with ordinary, cheaper fillers.

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TRADE MARK

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Analysis of Bisulphite Cooking Liquors With Calcium Hypochlorite

By Kenneth A. Kobe[1] and Bernard A. Burke[1]

Abstract

1. Calcium hypochlorite solution may be used for the analysis of bisulphite liquors.

2. Calcium hypochlorite reagent is very inexpensive compared to the usual reagents. It is stable.

3. Both sulphur dioxide and ammonia may be determined in ammonium bisulfite liquors by the use of calcium hypochlorite reagent.

Bisulphite cooking liquors are usually analyzed by either of two methods. In the standard TAPPI method *(1)* the bisulphite is oxidized with excess standard iodine solution and the excess iodine is backtitrated with standard sodium thiosulphate solution. In a separate sample the free SO_2 is titrated with standard alkali using phenolphthalein as the indicator. In the Palmrose method *(2)* the bisulphite is titrated with standard potassium iodate in the presence of potassium iodide and starch. The free acid formed is then titrated in the same sample with standard alkali using methyl-red as the indicator. The Palmrose method has the advantage of using but one sample for both total and free SO_2 determinations and reduced cost due to the greater oxidizing value of potassium iodate.

Jackson and Parsons *(3)* in 1937 proposed a method using sodium chlorite for the analysis of bisulphite liquor. Their method substitutes sodium chlorite for the potassium iodate in the Palmrose method. Their standard chlorite solution is standardized against bisulphite solution analyzed by the Palmrose method.

The introduction of calcium hypochlorite, CaO_2Cl_2, as a bleaching agent makes available a cheap oxidizing agent which may be substituted for the expensive reagents of the standard TAPPI and Palmrose methods for use in routine control analyses.

Kolthoff and Stenger *(4)* studied calcium hypochlorite as a volumetric oxidizing agent. They found the solution is stable over long periods of time and may be used in both direct and indirect titrations. They determined ammonia by this method.

Experimental

Preparation of Calcium Hypochlorite Solution

The solution of calcium hypochlorite is prepared according to the directions of Kolthoff and Stenger *(4)*. For 0.1N solutions, 8 grams of commercial calcium hypochlorite is stirred with 200-300 cc. of water. The solution is allowed to settle and then filtered through a Buchner funnel. The filtrate is diluted to one liter. A black bottle, wrapped with black paper to insure no penetration by light, is used as a container.

The stability of a solution of calcium hypochlorite made according to these directions is given by the following table:

Time after Preparation Months	Days	Normality
	1	0.1271
	14	0.1271
1	1	0.1270
1	11	0.1270
2	26	0.1270

The solution is standardized against standard $Na_2S_2O_3$ in the following manner: To 25 cc. of CaO_2Cl_2 solution add 1.0 to 1.5 grams of KI, 5 cc. of 6N H_2SO_4 and titrate with standard $Na_2S_2O_3$ *(5)*.

Analysis of Bisulphite Solution

(1) Determination of total SO_2. To attempt to use calcium hypochlorite solution in the same manner as potassium iodate usually meets with failure, especially with liquors whose free SO_2 content is low. Calcium hypochlorite solution gives quantitative results if the solution is first acidified with acetic acid or 6N sulphuric acid. The method consists of pipetting a 2.00-cc. sample of liquor into an Erlenmeyer flask containing 50 cc. of water. About 2 cc. of 10 per cent starch-iodide solution is added, together with 10 cc. of 6N sulphuric acid. The solution is then titrated with calcium hypochlorite solution until the permanent blue starch-iodine endpoint is reached. The volume of solution used is calculated to SO_2. The free SO_2 is determined by using a new sample and titrating directly with 0.1N NaOH, using phenolphthalein as indicator. The NaOH is calculated to SO_2. Total SO_2 minus free SO_2 equals the combined SO_2.

Samples of liquor taken from a digester at various stages of a cook were analyzed according to the method described above. The following results were obtained:

[1] Department of Chemical Engineering, University of Washington, Seattle, Wash.

CaO_2Cl_2		KIO_3	
Total SO_2 Per Cent	Free SO_2 Per Cent	Total SO_2 Per Cent	Free SO_2 Per Cent
7.42	3.25	7.39	3.27*
5.50	1.06	5.50	1.06*
3.59	1.69	3.62	1.69*
3.30	...	3.27	...
2.97	1.33	2.94	1.33
2.65	...	2.63	...
2.61	0.50	2.62	0.50*
2.48	1.09	2.48	1.09
1.75	0.70	1.73	0.70
1.33	...	1.29	...
1.08	0.60	1.08	0.60

* Liquor with no organic material.

(2) Determination of ammonia. Calcium hypochlorite solutions may be used in the determination of ammonia. The hypochlorite must be standardized against $Na_2S_2O_3$ in the usual manner and against sodium arsenite solution as described by Kolthoff and Stenger *(4)*.

To 25 cc. of standard As_2O_3 solution in a 250 cc. Erlenmeyer add 10 cc. of a solution of 10 per cent KBr and 5 per cent $NaHCO_3$. Titrate at a moderate speed with CaO_2Cl_2 until near the expected endpoint, add a drop of Bordeaux indicator and titrate dropwise with stirring until color fades. Then add another drop of indicator and if it does not fade add more CaO_2Cl_2 cautiously until a split drop causes the solution almost to "flash" from pink to colorless or light yellow green. These indicator reactions are not reversible, hence one must make certain that the endpoint has actually been reached when color has faded. Test by adding more indicator.

In order to determine ammonia, control of the hydrogen-ion concentration is the important factor, and hence, under the proper conditions, ammonium bisulphite liquor may be analyzed for both ammonia and total SO_2 by means of calcium hypochlorite solution.

The first step is to determine the volume of hypochlorite used for the determination of total SO_2 by the method described above. For the ammonium determination a new sample is taken and the volume of hypochlorite corresponding to the SO_2 is run into the flask from a buret. A solution of saturated $NaHCO_3$ is then added until frothing ceases, and 10 cc. of 10 per cent KBr solution is introduced. The solution is then titrated with hypochlorite solution until a light yellow color appears, indicating an excess. The solution is then titrated with hypochlorite solution until a light yellow color appears, indicating an excess. The solution must now stand for three or four minutes. This time cannot be decreased. After this time has elapsed, 10 cc. of sodium arsenite solution is pipetted into the solution. A few drops of Bordeaux indicator is added and the solution shaken. If the solution is not pink at this point add more arsenite and indicator until the pink color is permanent. Titrate the solution with hypochlorite until the solution flashes from pink to colorless or light green, exactly as in the standardization against arsenite. From the total volume of hypochlorite used subtract the volume corresponding to the SO_2 and to the arsenite solution. The remainder indicates the volume of hypochlorite required to oxidize the ammonia on the basis of 3 equivalents of hypochlorite per mol of ammonia.

The results secured by this method were compared with those obtained by distillation.

CaO_2Cl_2		Distillation	
NH_3 Per Cent	Milligrams of Nitrogen	NH_3 Per Cent	Milligrams of Nitrogen
1.22	20.1	1.26	20.8
1.23	20.2	1.25	20.6
1.22	20.1	1.25	20.6

In order to check the results obtained in the determination of ammonia, a sample of analytical grade ammonium chloride was weighed out into a 250 cc. volumetric flask and made up to volume. The hypochlorite solution was used with aliquot portions of this ammonia solution. The amount of ammonia determined by the hypochlorite was compared to the amount of ammonia actually present in the aliquot part. The following results were obtained:

Milligrams of Nitrogen Present	Milligrams of Nitrogen Determined	Per Cent Error
6.73	6.76	0.45
6.75	6.65	—1.2
13.46	13.31	—1.1
13.46	13.30	—1.2
13.46	13.20	—1.9

Acknowledgment is made to the Pennsylvania Salt Manufacturing Company for its donation of commercial calcium hypochlorite, "Perchloron," for use in this work.

Literature Cited

(1) TAPPI Standard, T 604 m-35.
(2) Palmrose, *Paper Trade J.* 100, no. 3: 38-9 (1935).
(3) Jackson and Parsons *Ind. Eng. Chem. Anal. Ed.* 9: 14-15 (1937). *Paper Trade J.* 104, no. 8; 122-4 (1937).
(4) Kolthoff and Stenger *Ind. Eng. Chem. Anal. Ed.* 7, 79-81 (1935).
(5) Kolthoff and Sandell, Textbook of Quantitative Inorganic Analysis, Macmillan Co., New York, pp 610-11 (1936).

Business Revival in Fall

At the regular weekly luncheon of the Eastern division of the Salesmen's Association of the Paper Industry, at the Hotel Lexington, New York City on May 16, Benjamin Chambers of the Brookmire Economic Service talked on the outlook for business. Mr. Chambers said in part: "There are potential needs for an enormous amount of capital fixation. It has been estimated by good authority that there is need for 1½ to 2 million new housing units, to say nothing of the renovation of those now obsolete. There is, furthermore, a large portion of the nation's productive plant and equipment which is over twenty years old and obsolete by modern standards . . . No pressure on the price level, due to the calling of loans, is present, and invisible inventories have been reduced to a workable basis. Though commodity prices have continued heavy down to the present time, little further decline is likely.

"The new pump-priming will be slow to exert its effect on production volumes. By October or November, however, as these expenditures accumulate, and as the new automobile season is ushered in, there should be unmistakable signs of industrial revival."

National Colloid Symposium

The Fifteenth National Colloid Symposium will be held June 9-11 inclusive at the Massachusetts Institute of Technology, Cambridge, Mass.

The Colloid Symposium Committee of the Division of Colloid Chemistry, American Chemical Society, and the Committee on Colloid Science, National Research Council, extend a cordial invitation to their members and friends interested in the science of colloids to attend.

The headquarters of the symposium will be in the Hancock Room, Hotel Statler in Boston.

Effect of Maximum Digestion Temperature In Pulping Western Hemlock of Four Growth Types by the Sulphite Process

By J. N. McGovern[1] and G. H. Chidester[2]

Abstract

Increasing the maximum pulping temperature from 130 to 150 deg. C. in the production of easy-bleaching pulps or equivalent bleach requirement from western hemlock of four growth types resulted in an average reduction in yield of 0.5 per cent for each 10 deg C. increase. The decrease in yield was accompanied by relatively small decreases in bursting-and tensile-strength factors, especially when the temperature was raised from 140 to 150 deg. C.

The maximum digestion temperature is known to be an important factor of the temperature schedule in sulphite pulping, and its effect on the yield and quality of sulphite pulp has been the subject of numerous researches.

The important role of temperature in sulphite pulping was emphasized in earlier work of the Forest Products Laboratory (*1, 7, 8, 9, 10, 11*). This work developed certain principles with regard to the temperature of pulping, namely, that (1) if 135 deg. C. is reached before the pulp has attained a certain degree of delignification, cellulose as well as lignin is attacked and the yield is reduced; (2) cellulose is destroyed at a rate that increases faster with rise in temperature than the lignin removal; and (3) there is a temperature in the neighborhood of 140 deg. C., above which the rate of change of cellulose is quite out of proportion to the lignin removal. The general recommendation was that the lowest possible temperature that will give the required purification in the time available will produce the best yield of strong plup for the same lignin removal. The conditions employed in the Mitscherlich process were cited as favorable for the production of a high yield of strong pulp.

Johnsen and Reese *(5)* carried out two series of digestions on spruce and balsam of varying densities. In the first series the total cooking time was constant at 12 hours and the temperature was gradually increased to the end; the maximum temperature was varied to produce pulp with the desired bleach requirement, the variation being 135 to 145 deg. C. In the second series the temperature was raised rapidly to 130 deg. C. after the penetration period and held there for varying times in order to produce pulp with the desired bleach requirement, the variation in time at 130 deg. C. being from 6 to 8 hours depending on the wood used. The results of these two series of digestions showed that for pulps with equal bleach requirements the yields from the digestions at 130 deg. C. were about 1 per cent higher than those from the digestions carried out at higher temperatures. The strengths of the pulps, however, were about the same.

DeMontigny and Maass *(2)* determined the influence of maximum temperature independent of other digestion variables by using their special cooking procedure at different maximum temperatures in the production of pulps of the same lignin content and verified the work of the previous investigators. They also assumed 140 deg. C. as the optimum cooking temperature for the "quick-cook" process. Cooking at a higher temperature reduced the time only slightly and was accompanied by a decrease in strength and yield. Cooking at a lower temperature required a longer time, but the pulp yield and strength were increased. They also agreed that the slower Mitscherlich process produces a better grade of pulp.

Eastwood *(3)*, in experiments in which the rate of rise-to-the-maximum-temperature was decreased as the maximum temperature was increased to give a constant cooking time in all instances, only partially checked the work already described. He found in the production of pulps of equal bleach requirements in the same time that the maximum bursting strength of the pulp was influenced by the maximum temperature but that the yield was not. The best strength value was obtained at a temperature of 145 deg. C.; above that temperature the maximum burst value dropped although the yield value was unchanged. The results of the digestions below 145 deg. C. appeared to be influenced by the penetration treatment applied.

In digestions in which the duration time was held constant, McGovern *(6)* attributed the higher yield and generally improved pulp quality, which resulted when lower temperatures were made possible by an increased sulphur dioxide content of the cooking liquor (no relief during the digestion), to the lower temperatures used.

Among other factors, the effects of which are interrelated with those of the maximum temperature, are the properties of the wood itself and the desired delignification of the pulp. There appears to be little specific information available dealing with the former. The latter is tied up with the time at the maximum temperature, which has received some experimental attention. DeMontigny and Maass *(2)* found that as the pulp became softer on longer cooking, the strength rose to a maximum when the pulp contained about 4 per cent lignin. On further cooking, the rate of lignin removal was slower, the yield dropped because of cellulose hydrolysis, and the strength fell. Monsson *(9)* found in reducing the bleach requirement of pulp by holding it at the

[1] Member TAPPI, Assistant Technologist, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, Madison, Wis.
[2] Member TAPPI, Engineer.

maximum temperature that the loss in yield and strength was in the order of ease of pulping; that is, the lignin in certain woods can be removed more readily without injury to the cellulose.

In this report the results of sulphite digestions at maximum temperatures of 130, 140, and 150 deg. C. are compared on the basis of the pulp yields and characteristics obtained from western hemlock of four growth types.

Experimental

The experimental work described in this report consisted of sulphite digestions carried out at three maximum temperatures, 130, 140, and 150 deg. C. The maximum temperature was the only independent variable, the time at the maximum temperature being adjusted to produce pulps with the desired bleach requirement. The conditions employed in carrying out these digestions are summarized in Table I. The temperature schedules used are shown graphically in Fig. 1.

The pulping experiments were made on 5/8-inch chips from western hemlock *(Tsuga heterophylla)* pulpwood logs of rapid and slow-growth wood from old and young-growth trees. The logs were supplied by the Pacific Northwest Forest Experiment Station. The middle logs of the trees were used in all instances; their physical and chemical properties are given in Table II.

TABLE I.—DIGESTION CONDITIONS

Maximum temperature Deg. C.	Time to 110° C. Hours	Time at 110° C. Hours	Time from 110 deg. C. to maximum temperature Hours	Total digestion time Hours	Maximum pressure Lbs./sq. in.	Acid composition: Total SO_2 —Per Cent—	Acid composition: Combined SO_2 —Per Cent—
130	1.5	1.0	1.0	12.7	75	5.5	1.15
140	1.5	1.0	1.5	9.6	75	5.5	1.15
150	1.5	1.0	2.0	7.8	75	5.5	1.15

The digestions were carried out in semicommercial pulping equipment having a capacity of 50 pounds of pulp *(6)*. The different wood types were pulped simultaneously under the same conditions by means of cylindrical, perforated baskets which were placed in the digester proper.

The determination of the pulp yields, strength properties by pebble mill and beater processing, and bleach requirements were made by methods standard at the Forest Products Laboratory *(4)*.

Discussion

When the maximum pulping temperature was raised, the time at the maximum temperature and the total digestion time were materially decreased in the production of pulps of equal bleach requirement. The times for the maximum temperatures of 130, 140, and 150 deg. C. were 9.2, 5.6, and 3.3 hours and the times of total duration were 12.7, 9.6, and 7.8 hours, respectively. As a result of the decrease in acid concentration accompanying relief of the digester, the decreases in the pulping time with the application of higher temperatures are smaller than those that would result from the normal doubling of the pulping rate for every 10 deg. C. rise in temperature.

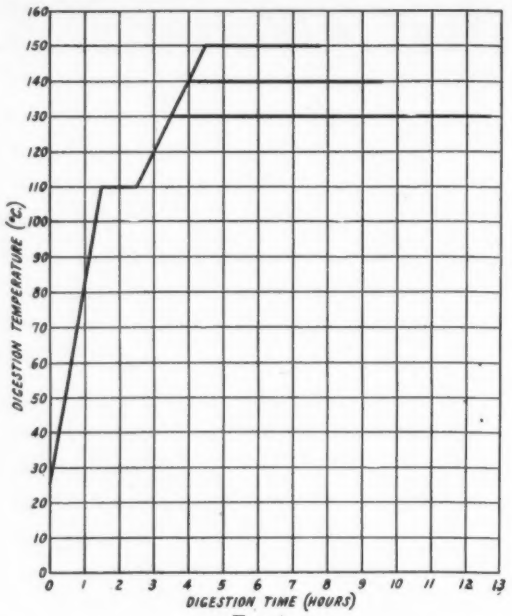

FIG. 1.

Temperature Schedules Used To Show Effect of Maximum Pulping Temperature In Cooking Four Types of Western Hemlock.

Since comparisons of pulp yield and properties are more satisfactorily made on the basis of equal bleach requirements of the pulps being compared, the time at the maximum temperature was adjusted with this in mind. When the digestion times resulting in pulps having the desired bleach requirement had been established, check digestions furnished pulps whole bleach requirements for the most part agreed satisfactorily. Thus the yield data in Table III are based on three to five pulps and the bleach requirement and strength property data on two to three pulps. In the majority of the cases these data are the average of the data from pulps whose bleach requirements were the same or differed by 1 to 3 per cent. In two of the cases (the old, slow-growth wood and the young, rapid-growth wood digested at 150 deg. C.) the spread in bleach requirement was too great to allow averaging, so that the yield and strength property data were extrapolated to the desired bleach requirement, a procedure deemed justified since the data at hand were for pulps whose bleach requirements were only 2 to 3 per cent higher than the desired comparison figure.

Effect of Maximum Temperature on the Pulp Yield

The yields of the pulps are given in Table III.

TABLE II.—PHYSICAL AND CHEMICAL PROPERTIES OF WESTERN HEMLOCK OF FOUR GROWTH TYPES

Growth type: Growth class	Growth type: Age class	Growth rate rings per inch	Density Pounds per cu. ft.	Spring-wood Per cent	Age Years	Chemical analysis: Cellulose	Alpha cellulose	Lignin	Total pentosans	Extractives: Alcohol benzol	Ether	1 per cent NaOH	Hot water
						—Per cent—							
Old	Rapid	14.0	23.0	66	137	59.2	41.0	29.5	9.4	3.1	0.6	12.5	3.5
Old	Slow	46.3	25.9	60	320	56.2	41.3	28.2	8.4	6.6	1.1	14.8	4.9
Young	Rapid	9.4	23.6	70	75	59.9	42.1	29.5	8.8	2.1	.2	11.3	2.6
Young	Slow	23.9	27.6	58	79	61.0	45.0	29.3	8.9	1.3	.3	10.4	1.3

Five groups of digestions are available for determining the effect of changes in the maximum pulping temperature; four of the group of pulps are from basket digestions containing each of the four wood types and the other group of pulps is from the main digestion charge.

As the maximum pulping temperature was increased, the yield of pulp decreased in the production of pulps of the same bleachability. The average yield-decrease per unit temperature increase as well as the distribution of the yield-decrease with respect to the maximum pulping temperature was somewhat dependent on the wood type pulped.

The basket pulps from the two rapid-growth woods showed drops in yield for the temperature range of 130 to 150 deg. C. of 1.4 per cent, while the pulps from the two slow-growth woods showed yield-decreases of 0.6 to 0.8 per cent for the same temperature range. The pulps from the main digestion charge showed the greatest yield-decrease, 1.9 per cent, with increase in temperature from 130 to 150 deg. C. These latter pulps had a slightly higher bleach requirement than the former. The average yield-decrease over the total temperature range was 1.1 per cent or closely 0.5 per cent per 10 degree temperature increase.

The distribution of the yield-decrease with temperature increase also depended somewhat on the wood type. The pulp from old, rapid-growth and young, slow-growth woods decreased for the most part when the temperature was raised from 130 to 140 deg. C. with only a small drop resulting when the temperature was raised from 140 to 150 deg. C. The pulps from the old, slow-growth and the young, rapid-growth woods, on the other hand, showed very little yield-decrease when the temperature was raised from 130 to 140 deg. C., but a relatively large decrease when the temperature was increased from 140 to 150 deg. C. On the average, however, for all woods there was an even distribution of yield-decrease, amounting to 0.5 per cent for each 10 deg. C. increment in temperature. It may be noted that the relatively small yield-decreases with increase in temperature under the conditions here employed were completely overshadowed by the large variation in yield from the different wood types; the pulp yield from the young, slow-growth wood, for instance, exceed that from the old-slow-growth wood by 5 to 6 percent.

Effect of Maximum Temperature on Pulp Strength

The effect of the maximum temperature on the strength characteristics of the pulp was determined by both pebble mill and beater tests. Although somewhat different values were obtained by the two test methods, the beater giving higher bursting and tensile strength and lower tearing strength values, the trends were similar; therefore, only the beater tests are reported. These data appear in Table III where each strength characteristic is listed for two representative freeness values, 800 cc. and 550 cc.

As the maximum pulping temperature was increased, certain small differences in the strength properties of the pulps resulted, especially in their bursting and tensile strengths.

Bursting Strength

When the maximum pulping temperature was raised from 130 to 140 deg. C., only a slight drop in the bursting-strength factor was experienced. This was true at the two freeness values given in Table III, with the exception of the pulp from the old-slow-growth wood processed to a freeness of 550 cc. in which case a drop of nearly 0.1 point resulted. The average decrease in the bursting-strength factor was only 0.02 to 0.03 point. When the temperature was raised from 140 to 150 deg. C., however, the decrease in bursting strength, although still relatively small, was more substantial. The drop amounted to 0.11 point for the pulp from the old, slow-growth wood processed to 800 cc. freeness. The average decrease in this factor was 0.07 to 0.08 point. The pulps from the wood digested in the main charge have somewhat erratic bursting-strength values. The overall decrease in bursting strength caused by increasing the maximum temperature from 130 to 150 deg. C. was 0.1 point per pound per ream.

Tearing Strength

The increase in maximum pulping temperature had little effect on the tearing strengths of the pulps from the different types of wood. Differences when they did occur were small and apparently were not related to any effects caused by changing the maximum temperature of pulping. There was perhaps a slight tendency for the pulps made at 140 deg. C.

TABLE III.—EFFECT OF MAXIMUM TEMPERATURE IN SULPHITE PULPING OF WESTERN HEMLOCK OF FOUR GROWTH TYPES

Maximum temperature Deg. C.	Wood: Age class	Wood: Growth type	Yield of pulp: Total	Yield of pulp: Screened	Yield of pulp: Screenings	Bleach requirement for 85 parts blue Per cent std. bl. powder	Beater strength tests—25x40—500 ream: Bursting strength Freeness-SR 800 cc. Points per pound per ream	Bursting strength Freeness-SR 550 cc. Points per pound per ream	Tearing strength Freeness-SR 800 cc. Grams per pound per ream	Tearing strength Freeness-SR 550 cc. Grams per pound per ream	Tensile strength Freeness-SR 800 cc. Pounds per square inch	Tensile strength Freeness-SR 550 cc. Pounds per square inch	Solid fraction Freeness-SR 800 cc.	Solid fraction Freeness-SR 550 cc.	Beating time Freeness-SR 800 cc. Minutes	Beating time Freeness-SR 550 cc. Minutes
Pulps from baskets																
130	Old	Rapid	45.3	45.2	0.1	10	1.13	1.38	1.88	1.57	7,100	9,650	0.48	0.54	16	54
140			44.2	44.1	.1	11	1.10	1.39	1.85	1.55	7,100	8,800	.47	.52	16	55
150			44.0	43.8	.2	10	1.03	1.29	1.85	1.65	5,500	8,000	.44	.49	19	56
130	Old	Slow	43.0	42.8	.2	11	1.12	1.45	1.80	1.45	6,800	10,900	.48	.54	16	53
140			43.1	42.9	.2	10	1.10	1.36	1.75	1.50	7,800	9,700	.49	.56	18	56
150			42.6	42.2	.4	11	.99	1.29	1.65	1.45	6,600	9,000	.46	.51	17	57
130	Young	Rapid	46.2	45.9	.3	12	1.19	1.40	1.85	1.75	7,750	10,500	.50	.54	22	62
140			45.8	45.6	.2	13	1.19	1.40	1.77	1.50	7,300	10,000	.50	.57	22	61
150			44.8	44.5	.3	12	1.09	1.36	1.85	1.60	8,000	9,000	.50	.56	21	56
130	Young	Slow	49.0	48.9	.1	12	1.14	1.38	1.98	1.75	6,750	9,500	.48	.52	24	63
140			48.2	48.1	.1	12	1.10	1.36	1.92	1.70	6,950	9,850	.50	.55	22	62
150			48.3	48.1	.2	13	1.05	1.30	2.25	1.80	6,400	9,200	.45	.50	24	64
130	Average		45.9	45.7	.2	11	1.15	1.40	1.88	1.63	7,100	10,138	.48	.54	20	58
140			45.3	45.2	.1	12	1.12	1.38	1.82	1.56	7,288	9,588	.49	.55	20	58
150			44.9	44.6	.3	12	1.04	1.31	1.90	1.62	6,625	8,800	.46	.52	20	58
Pulps from main charge																
130	Old	Rapid	44.9	44.8	.1	14	1.04	1.29	1.88	1.48	6,200	9,500	.47	.57	12	42
140			43.4	43.2	.2	14	1.02	1.20	1.90	1.40	6,300	8,800	.47	.54	15	49
150			43.1	42.9	.2	14	1.02	1.25	1.78	1.41	5,800	8,800	.49	.56	18	57

to have lower tearing strength values than the other pulps.

Tensile Strength

The tensile-strength values showed the same general trends found for the bursting-strength values, although the data were less consistent. The tensile-strength factors at the 800 cc. freeness value for the pulps from the two slow-growth woods were slightly higher when a maximum temperature of 140 deg. C. as compared with 130 deg. C. was used, and as a result the average value for the four pulps is also higher. Except for pulp from young, rapid-growth wood, the pulps made at 150 deg. C. had tensile-strength factors at the 800 cc. freeness value which were lower than those of the pulps made at 140 deg. C.; the difference was of the same order found for the corresponding bursting-strength factors. With the exception of the pulp from young, slow-growth wood, the tensile-strength factors at the freeness of 550 cc. showed a slightly greater decrease with increase in maximum temperature from 130 to 140 deg C. than was the case with the bursting-strength factors. When the temperature was raised from 140 to 150 deg. C. a small but substantial decrease in the tensile-strength factor was noted.

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Review Of The Paper Industry Literature

Abstracts Compiled By the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson and Clarence J. West, Chairman of the Committee.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Beating

Beating Engine. S. Milne. Brit. pat. 469,551 (Dec. 27, 1935).—A cast iron roll body is provided with cast-in ribs of steel, wrought iron, or other non-brittle metal to which the actual cutters are renewably attached.—A.P.-C.

Grinding and Hydrating Paper Pulp. Ateliers Neyret-Beylier, assignor to Kristen A. Thorsen. Brit. pat. 468,407 (July 5, 1937).—In a machine for grinding, defibrating, washing, refining and hydrating paper pulp, similar to that of Brit. pat. 422,680, the fibrous material thrown from the crushing rollers to the drum is held there by centrifugal force until scraped off when it falls onto inclined pivoted plates vibrated and adjusted through a rod, etc., to feed it uniformly along the axis of the drum from the inlet hopper to the delivery hopper above which a perforated part of the drum is washed by a spray.—A.P.-C.

Bandless Jordan Plug. Alfred Dorman, assignor to E. D. Jones & Sons Company. U. S. pat. 2,098,279 (Nov. 9, 1937).—The invention provides a construction in which all parts, including the wood filler blocks, are postively locked together by pin-and-shoulder, mortise, or like engagement, and in which individual bars can be easily replaced without disassembling the whole plug. (Cl. 92-27).—A.P.-C.

Bleaching

Pulp Bleaching Under Ultra Violet Light. W. Hirschkind, D. J. Pye and E. G. Thompson. Paper Trade J. 105, no. 18: 118-119 (Oct. 28, 1937).—Escourrou's theories of the effect of ultra violet light in the bleaching reaction in pulp (*Chimie et Industrie* 19, 989-997 [June, 1928]) are reviewed. From tests made to determine the optimum conditions of using such light it is concluded that the range of 350 to 385 millimicrons is optimum. The nature of the process makes it applicable to sulphite, soda and kraft pulps intended for either paper or high alpha-cellulose consumption. Samples of bleached pulps were prepared with physical and chemical characteristics equal to the best of those now commercially produced but with considerably brighter colors.—A.P.-C.

High Density Vacuum Bleaching of Kraft Pulp. J. Campbell and L. O. Rolleston. Paper Trade J. 105, no. 18: 125 (Oct. 28, 1937); Pulp Paper Mag. Can. 38: 824-825 (Nov., 1937).—A brief description of the process covered by U. S. pat. 2,089,992 (Aug. 17, 1937), pointing out its merits.—A.P.-C.

Bleaching of Paper Pulp. James F. White, assignor to Mathieson Alkali Works. Can. pat. 368,395 (Aug. 31, 1937).—Kraft or sulphate pulp is incompletely bleached with chlorine in an aqueous medium and bleaching is completed with an aqueous chlorine solution of pH approximately 3.5 to 5.0 at approximately 70 to 80 deg. C.—A.P.-C.

Kraft Pulp Bleaching Process. James S. Sconce, assignor to Hooker Electrochemical Company. U. S. pat. 2,098,111 (Nov. 2, 1937).—After chlorination in accordance with the process of Rue's U. S. pat. 2,001,268 (May 14, 1935), the material is bleached with caustic soda. This step is followed by a hypochlorite-bleaching step, to produce a high-white pulp having the strength of kraft pulp. (Cl. 8-2).—A.P.-C.

Sizing

Sizing of Handmade Leatherboard. Wochbl. Papierfabr. 68, no. 39: 741; no. 44: 837 (Sept. 25, Oct. 30, 1937); B. I. P. C. 8:132.—The inquirer tried to make his leatherboards harder and more

water resistant by the addition of rosin size and alum to the pulp in the channels. This proved quite successful; however, the ensuing foam formation prohibited all further experiments. The pulp (pine wood) is fed from the grinder via the screens directly to the board machine. Advice is sought for the best method of size application without causing foam, or other means for making the boards hard and tough. One answer suggests the use of sodium silicate and alum as sizing agent; the others point out that stuff chests with stirring equipment are essential for obtaining a thorough and uniform sizing of the pulp. The application to the channels will always be irregular and result in great losses. Special chemicals (no name mentioned) can be added to make the boards hard. Foaming can be prevented by the addition of special preparations (Antispumin, Spumex, etc.). Montan wax as sizing agent in the place of rosin causes little foam trouble. Pine wood has a strong foaming tendency, especially in green condition; hence only well seasoned wood should be used, hot grinding should not be employed, and in conveying the pulp, the formation of eddies and high heads should be carefully avoided.—C.J.W.

Paper Sizing With Water Glass. Wochbl. Papierfabr. 68, no. 29: 509; no. 30: 566; no. 31: 584; (July 3, 24, 31, 1937); B. I. P. C. 8:159.—The inquirer asks for the best method of sizing paper with water glass of 37/40 deg. Bé. and what paper specialties are most suitable for this treatment. Nearly all papers can be sized with water glass. The best application is in the beater; alum is added after thorough mixing until a slightly acid reaction is obtained. Paper treated in this manner has excellent rattle and feel; however, since water glass has the tendency to make the paper hard, the best proportions for each individual case should be determined by trials.—C.J.W.

Improved Process of Incorporating Starch in Paper. Penik and Ford, Ltd., Inc. Fr. pat. 821,400 (May 3, 1937).—Starch is swollen to a point where the cross observed under crossed nicols disappears while the grains remain separate, this being conveniently obtained by heating in water in presence of an agent which prevents disintegration (e.g., soaps, sulphonated vegetable oils or sulphonated alcohols). The swollen starch is added either moist, wet or dry to the paper.—A.P.-C.

Sizing Paper. Ernest E. Mayer. Brit. pat. 466,511 (May 31, 1937).—Paper, paper board, card, chip board, carton, greaseproof paper, etc., made from unsized fibers, e.g., kraft or sulphite, is sized by applying to one or both sides an aqueous emulsion containing 0.5 to 5 per cent of wax, e.g., carnauba, montan, Japan, paraffin, 0.1 to 0.5 per cent being retained. Starch or animal glue may be used in the emulsion.—A.P.-C.

Sizing Paper. Antonio M. Lloysis. Fr. pat. 811,264 (April 10, 1937).—Paper is sized with aluminum resinate produced by reaction between aqueous solutions of aluminum sulphate and alkali resinate in the presence of aluminum hydroxide. The aluminum hydroxide may be produced by the action of sodium carbonate on part of the aluminum sulphate.—A.P.-C.

Manufacture of Sized Paper. Oscar F. Neitzke, assibnor to Bennett, Inc. U. S. pat. 2,096,129 (Oct. 19, 1937). — An aqueous hydrocarbon wax-rosin dispersion is stabilized by the addition of inert or non-precipitable compounds, such as neutral salts of sulphonic acids or water-soluble gums of the nature of gum arabic. By control of the particle size and the proportion of wax in the wax-rosin mixture, substantially all the dispersed particles may be fixed on papermaking stock by the action of a small amount of alum. (Cl. 92-21).—A.P.-C.

Composition of Matter for Increasing the Water-Resistance of Paper Products. Carleton Ellis, assignor to Ellis-Foster Co. U. S. pat. 2,099,880 (Nov. 23, 1937).—A paper sizing composition consists of an aqueous emulsion of an oxidized petroleum wax and a hydrocarbon oil. (Cl. 134-22).—A.P.-C.

Fillers

Sardinian Kaolin As a National Raw Material. Felice De Carli. Atti V congr. nazl. chim. pure applicata, Rome 1935, part 1:121-134 (1936); C. A. 32:314.—The kaolin deposits at Cagliari have resulted from decomposition of trachyte under the action of thermal waters; the accessible deposits are estimated at 700,000 tons. Several analyses show the material to be suitable for use in the porcelain, paper and rubber industries.—C.J.W.

Southern Clays for Paper Making. Poole Maynard. Paper Trade J. 105, no. 18: 124-125 (Oct. 28, 1937).—A review of the progress made in utilizing southern clays in the paper industry.—A.P.-C.

Mica As a Paper Filler. M. D. Papeterie 59: 1054, 1057 (Nov. 25, 1937).—A brief discussion of the properties of mica from the standpoint of its use as a paper filler.—A.P.-C.

Colloidal Clay in Papers. Maurice Déribéré. Papier 40: 913-917 (Nov., 1937).—A brief discussion of the properties of bentonite and its use in paper making.—A.P.-C.

Drying

Increasing the Rate of Dewatering of Boards by Electrical Heating. Wochbl. Papierfabr. 68, no. 36:681; no. 38:720 (Sept. 4, 18, 1937); B. I. P. C. 8:132.—Reference is made to the possibility of passing an electric current through the boards in the hydraulic press; the electric resistance causes the boards to become heated and the rate of dewatering increases about 10 per cent. Has this experience been utilized commercially? Experiments along this line have been made repeatedly and a certain advantage can without doubt be realized, especially in large plants which produce their own current. The greatest obstacle, in Germany at least, is the high price of such an installation and of the electric current.—C.J.W.

Drier Drainage on Paper Machines. A. E. Broughton. Paper Trade J. 105, no. 16: 24-26 (Oct. 14, 1937).—A brief discussion of proper control of paper machine drier drainage. The bulk of the moisture variations in the sheet coming from the driers do not come from sheet changes but from variations in the steam supplied to the machine directly traceable to bad drainage conditions. A paper machine operating at one pressure from end to end, controlled by a suitable pressure controller, with each drier drained independently and completely all the time, will dry paper or board without any appreciable variation in moisture content.—A.P.-C.

Natural Method of Drier Drainage. A. E. Broughton. Paper Trade J. 105, no. 21: 20-25 (Nov. 18, 1937).—Methods of draining paper machine driers are classified as (1) mechanical (including all forms of forced circulation or all systems in which there is a drop of pressure in the return header to maintain a flow of steam, water and air through the driers), and (2) natural (whereby prac-

tically the same pressure is maintained in the return header as in the driers above and each drier is evacuated continuously and completely of air and water). A system based on the latter is described and its merits are discussed.—A.P.-C.

Flakt Drier and Heat Recovery System. Harald A. Erikson. Paper Trade J. 105, no. 23: 39-47 (Dec. 2, 1937).—Theoretical considerations relating to its development.—A.P.-C.

Paper Machine Felt Conditioner. Vickerys Ltd. Fr. pat. 819,215 (Aug. 31, 1936).—In a felt conditioner comprising a suction box that is traversed across the width of the felt, a perforated endless belt is interposed between the felt and the suction box, and is displaceable between the felt and the suction box.—A.P.-C.

Paper Machine Press. Beloit Iron Works. Belg. pat. 421,589 (June 30, 1937).—The press comrises a central roll on each side of which is a roll mounted so that the pressure exerted on the central roll may be regulated.—A.P.-C.

Arrangement of Felts in Horizontal Paper Machine Presses. Beloit Iron Works. Belg. pat. 421,644 (June 30, 1937).—The wet paper sheet is carried by means of a single felt through the pressing elements, one of which consists of a heated drum against which the paper is pressed by means of two or more rolls.—A.P.-C.

Drier Felts of Paper Machines. Thomas Hindle and Sam Lord. Brit. pat. 469,336 (July 23, 1937). —In joining the ends of a drier felt, the felt ends are folded back and sewn, wire loops or links of smaller overall thickness than that of the felt at the seam being inserted at regular intervals at the fold and interlaced by a flexible rod, wire, cord, etc.—A.P.-C.

Drying of Paper or Fiber Boards and Such Like. Tomlinson (Rochdale), Ltd., A. Shepherd, and R. R. Clegg. Brit. pat. 471,600 (March 14, 1936).—The clips attaching the paper to a chain conveyor have not a postive grip but allow the paper to slip on expansion or contraction and so prevent cockling. —A.P.-C.

Pulp Purification

A Study of the Ether Soluble Material in Sulphite Pulp From Southern Pine. Charles Carpenter. Tech. Assoc. Papers, 20: 371-376 (June, 1937); Paper Trade J. 105, no. 16: 42-47 (Oct. 14, 1937).—Sulphite pulp from the unseasoned sapwood of loblolly, longleaf and slash pines may be made reasonable pitch-free by suitable washing over an inclined wire. This washing reduces the ether-soluble content of the pulp to 0.6 per cent or less. Pulps so washed may be refined or bleached with reasonable immunity from pitch difficulties. The operation requires 30,000 to 50,000 gal. of water per ton of pulp and causes a loss of 2 to 6 per cent of the original pulp.—A.P.-C.

Treatment of Cellulose. Fredrich Olsen, assignor to Cellulose Research Corp. Can. pat. 368,622 (Sept. 14, 1937).—Woody material is treated to remove noncellulose constituents while the moisture content of the fibers is maintained above 30 per cent, and the water in the purified cellulose is displaced by acetic acid with substantially no shrinkage of the cellulose. The product contains over 96 per cent of alpha-cellulose and less than 6 per cent of alkali-soluble material, and can be converted with 3.0 parts of acetic anhydride to one part of cellulose by weight to a cellulose acetate suitable for films, sheeting, yarn and plastics.—A.P.-C.

Improvement to Centrifugal Pulp Purifiers. Erkensator G.m.b.H. Fr. pat. 815,101 (Dec. 16, 1936).—In Centrifugal purifiers of the Erkensator type, the lighter impurities which collect under a suitable ring near the outer edge of the bowl are removed periodically by means of a small suction pipe which is operated at intervals by suitable means (preferably hydraulic).—A.P.-C.

Purifying Cellulose. British Celanese Ltd. Henry Dreyfus and Stanley C. Bate. Brit. pat. 470,-764 (Aug. 18, 1937).—In the manufacture of cellulose suitable for the production of cellulose esters or ethers, viscose, etc., from wood pulp or other cellulosic material produced by the partial delignification of lignocellulosic materials, the cellulosic material is treated in at least two stages at above 100 deg. C. with an aqueous alkali solution the concentration of which does not exceed 5 per cent at any time during the treatment, and in at least two stages with a bleaching agent comprising free or combined chlorine in an acid medium, one or more of the bleaching stages being followed directly by a stage of the alkali treatment. In an example, commercial sulphite pulp is heated for 1 hr. in an autoclave at 120 deg. C. with 1.5 per cent sodium hydroxide, separated, washed and reheated at 120 deg. C. with 0.25 per cent sodium hydroxide; both before and after the second treatment, the pulp is bleached with acidified bleaching powder solution, the first bleach being with a stronger solution than the second.—A.P.-C.

Printing

Better Characterization of Printing Paper. Papier-Ztg. 62, no. 96: 1670-2, 1674 (Dec. 1, 1937); B. I. P. C. 8:167.—Since the printer should absolutely know more about his paper, the author, a printer, suggests standarized labels upon each ream in which the paper maker gives certain fundamental information with regard to raw materials, filler, sizing, basis weight, date of manufacture, special properties, etc. The article is published with the intention of inviting constructive criticism and further suggestions, especially from paper makers.—C.J.W.

Chromo-lithography Upon Paper, Carton, and Tissues. Kartonnagen- Papierwaren-Ztg. 41, no. 41: 433-4, 436 (Oct. 8, 1937); B. I. P. C. 8:167.—Directions are given for printing in colors upon paper, paper pasted to carton, and silk. The author advises to print upon thin paper and have this pasted to the board afterwards, instead of printing upon the pasted carton.—C.J.W.

Malerba, Enrico. Suggestions for the treatment of single or double coated paper prior to printing. Enrico Malerba. Ind. carta 4, no. 10:371-2 (October, 1937); B. I. P. C. 8:168. Practical suggestions are given for the treatment of chromo papers for color lithography to avoid subsequent troubles in printing. The paper maker should be informed as to the different colors to be used; the paper should be cut to exactly uniform size and be properly matured. The lithographic stone should never be excessively moist, and the paper should eventually be coated with a dilute turpentine solution prior to printing. Optimum results can only be obtained with double coated paper; not every paper is suitable for all kinds of printing processes. The absence of pinholes should be ascertained by holding a sample sheet against the light. Animal size is better than rosin size for multi-

color prints; highly sized paper is not suitable due to lack of absorbency. It is advisable for a printer to always purchase his paper from the same manufacturer. With regard to packaging the following advice is given. The ends of the package should never be pasted to allow free access of air. The longitudinal fold should never be pasted with starch, always with animal glue, because starch absorbs large quantities of moisture and is liable to spoil the top sheets. When the size of the sheets is increased, their number in a package should be reduced to avoid overweight and damage in handling.—C.J.W.

A Few Hint Concerning the Printing of Posters. Papier-Ztg. 62, no. 98: 1708-9 (Dec. 8, 1937); B. I. P. C. 8:169.—Posters are chiefly printed in offset or lithography, although intaglio and letterpress are also employed. The paper should be well sized for lithography and less for offset; it is incorrect to believe that the same paper is suitable for both processes. The best effects in several colors are obtained with coated paper. Posters pasted to board are usually of cheap quality; the content of groundwood, however, should not exceed 40 per cent. Quick drying inks must be used for aluminum foils, which are then best overprinted with transparent lacquers, cellulose lacquers, for instance. Lacquers should also be used for outside posters and the manufacturer should be informed that they are to be weather-resistant.—C.J.W.

The Printer's Views on Printing Papers. V. A. Vuorio, A. A. Alén and E. Teräskivi. Pappers-Trävarutid. Finland 19, no. 8: 395-6, 398-400, 402-4, 406 (April 30, 1937); B. I. P. C. 8: 170.—Various paper properties which influence the efficiency of printing are discussed for book papers and newsprint. The factors discussed include uniformity of thickness, quality of the paper surface, strength, curling, static charge, and errors in packaging and handling.

Atmospheric Moisture and Its Relation to News Print. Wm. Baumrucker, Jr. Paper Industry 19: 1174-1177 (Jan., 1938).—Data collected in the press rooms of the New York Daily News over a period of three years indicated that there seems to be no particular relationship between printing quality and the humidity of the air surrounding the web on a high speed newspaper press, and that there is no relationship between the running quality (tendency to have breaks) of a newspaper press web and the *relative* humidity of the surrounding air.—A.P.-C.

Foam

Foam Preventative. Wochbl. Papierfabr. 68, no. 38: 720; no. 40: 761; no. 41: 778 (Sept. 18, Oct. 2, 9, 1937); B. I. P. C. 8: 140.—The inquirer asks for the most suitable foam preventative in a board mill manufacturing gray and colored board from waste paper upon one-vat machines, and which has only non-purified river water at its disposal. Most answers suggest kerosene, glycerin, or special preparations sold under trade names (Antispumin, Spumex, etc.). The foaming tendency can be traced back to certain constituents in the waste paper; inclusion of air bubbles at any step of the operation should be carefully avoided, smooth flow of the pulp suspension without eddies and abrupt changes in level be provided, and a sufficient number of suitable shower pipes be installed.—C.J.W.

History

Different Historical Facts From the History of the Paper Making. Pappen- Holzstoff-Ztg. 44 (in Kartonnagen- Papierwaren-Ztg. 41), no. 39: 420; no. 40: 431-2; no. 41: 443-4; no. 42: 451-2 (Sept. 24, Oct. 1, 8, 15, 1937); B. I. P. C. 8: 142.—The spread of paper making from the East through different European countries is discussed with brief reference to the bull head water-mark. It has not yet been definitely established from where it originated; it was used for over three hundred years in many modifications and by many mills.—C.J.W.

The Transition From Parchment to Paper; the Victory of a New Product in the Middle Ages. H. Fiskaa. Papir-J. 25, no. 19:269-273; no. 20: 281-283 (Oct. 15, 30, 1937); B. I. P. C. 8:143.—The article is an historical study showing how paper gradually replaced animal parchment in the different European countries. It is incorrect to believe that this transition was a very sudden one. For a long time parchment and paper were used at the same time, although for different purposes. Valuable documents were still recorded on the durable parchment long after paper had come into general use.—C.J.W.

Permanency

Degradation of Sulphate Fiber By Bleaching. B. W. Scribner. Paper Industry 19: 1279-1280 (Feb., 1938).—Semi-bleached kraft envelopes were found to retain only 6 per cent of their original folding endurance on accelerated aging test, indicating that the paper would deteriorate rapidly. This was confirmed by experience. This instability is attributed primarily to the presence of degraded cellulose.—A.P.-C.

The Effect of Fiber Components on the Stability of Book Papers. M. B. Shaw and Martin J. O'Leary. J. Research Natl. Bur. Standards 17: 859-869 (1936).—The stability of experimental unsized papers made from pulps commonly used in the manufacture of fine printing papers is reported. The fibers included 4 kinds of purified wood pulp, soda pulp and sulphite pulp (mixed in beater furnish), new rags and old rags. The pulps and half-stuff ranged from 78 to 93 per cent alphacellulose content and from 3.8 to 0.4 copper number. The composition of the beater furnishes was 85 per cent of fiber and 15 per cent of clay. The experimental papers made from rags showed no appreciable change in the accelerated ageing (heat) test, indicating a high degree of permanence. The purified wood pulps produced relatively stable papers of satisfactory book-paper quality, although the ageing values were not the same in all instances. The soda-sulphite pulp mixtures produced less stable papers than the purified wood pulps. A close relation was shown between the purity of the cellulose in the fibers and the stability of the unsized papers made from them, but only small amounts of alum and no rosin size were used. The effects of these variables on stability, and of fillers, will be reported later on.—A.P.-C.

Adhesives

Pasting. Kartonnagen- u. Papierwaren-Ztg. 41, no. 49: 518, 520 (Dec. 3, 1937); B. I. P. C. 8:127.—Directions are given for pasting coated colored paper to board. The absence of acid in the paste must be ascertained; straw board contains sometimes residues of alkali which will lead to discolorations later on. If such boards must be employed, they should be first covered with a woodfree paper, or if the price does not permit this, coated with a starch paste and

dried before the actual pasting procedure. Thicker papers should be allowed to react with the paste for some time to make them more flexible and avoid the formation of folds and wrinkles.—C.J.W.

Improving of Adhesives. Karl Miskch. Chem.-Ztg. 61, no. 96: 940-942 (Dec. 1, 1937); B. I. P. C. 8:127.—The author emphasizes the importance of selecting the correct adhesive for the surface to which it is to be applied. He discusses admixtures by which the properties of the adhesive may be altered within wide limits, preservatives, as well as certain expedients when special papers, paraffined or parchment, for instance, repel the adhesive, or when the latter shows the tendency for striking through. The reason of this trouble is not always the adhesive; it may be caused by the furnish or size of the paper, dyestuffs or printing inks, application in incorrect consistency or thickness, too slow drying, or insufficient ventilation.—C.J.W.

Adhesives

Silicate of Soda in the Modern Box Plant. J G. Lander. Fibre Containers 23, no. 1: 10, 12 (Jan., 1938); B. I. P. C. 8:189.—The advantages of silicate adhesives for the corrugated box industry are described.—C.J.W.

Adhesive for Uniting Sheets of Paper. Philip S. Barnhart, assignor to Westfield River Paper Company. U. S. pats. 2,098,221 to 2,098,223 (Nov. 9, 1937).—The product comprises wax (preferably paraffin), rosin, rubber (preferably crepe rubber) and petrolatum. *No. 2,098,221* covers the product; *No. 2,098,222*, the process of preparing it, and *No. 2,098,223* a laminated sheet consisting of two sheets of glassine paper united by means of this adhesive. (Cl. 134-17, 134-17, 154-50).—A.P.-C.

Hydrogen Ion Concentration

Continuous Recording and Regulation of pH. Papier 40: 939-943 (Nov., 1937).—A brief description of the Leeds and Northrup *p*H recorder and regulator for continuously recording the *p*H of stock being fed to the paper machine and automatically regulating the addition of aluminum sulphate so as to maintain the *p*H value constant at a pre-determined value.—A.P.-C.

New Methods of Measuring pH and Its New Application in the Paper Industry in Germany. A. Karsten. Papeterie 59: 1009-1010, 1013 (Nov. 10, 1937).—A very brief outline of some of the most recently developed instruments for the colorimetric and electrometric determination of *p*H—A.P.-C.

The Tellurium Electrode. A New Electrode for Measuring pH. M. Déribéré. Papeterie 59: 902, 905 (Oct. 10, 1937).—A brief description of the construction and use of the tellurium electrode.—A.P.-C.

Analysis and Testing

Microscopical Analysis. M. Marini. Ind. carta 4, no. 11: 435-436 (Nov., 1937); B. I. P. C. 8:199.—The author describes a method for differentiating cotton and spruce pulp in vegetable parchment by treating it with calcium thiocyanate and then staining with zinc chloroiodide. The wood pulp will turn blue, the cotton fibers a wine red. For differentiating rayon and cotton fibers in paper, the sample is first washed with a 1-2 per cent sodium carbonate solution, and eventually bleached with hypochlorite or sodium hyposulfite in case of intensely colored fibers. If then treated with zinc chloroiodide, viscose and cuprammonium fibers will turn blue, acetate fibers yellow or bluish, and cotton fibers wine red. The cylindrical structure of the rayon fiber can readily be distinguished from the ribbon-shaped cotton fibers under the microscope.—C.J.W.

Identification of Fibers Other Than Wood Used in Paper Manufacture. Frederick F. Wangaard. Paper Industry 19: 777-784, 794 (Oct., 1937).—A description of the microscopic features valuable for the identification of the following non-woody fibrous materials used in the production of paper: cotton, flax, ramie, hemp, mitsumata, jute, sugar cane, corn, bamboo, esparto, rice, rye, barley, oat, wheat, manila hemp, New Zealand flax.—A.P.-C.

Colorimetric Determination of Titanium in Paper. V. Gruenman. Papier 40: 933-937 (Nov., 1937).—Two qualitative colorimetric tests are described. *Dry test*—Ash a sample of the paper; prepare a sodium-ammonnium-hydrogen phosphate bead; add some of the paper ash and a few fine grains of zinc fillings, and melt in the reducing portion of a Bunsen flame; in presence of titanium the bead turns yellow and becomes violet on cooling. Appreciable quantities of iron interfere by producing a reddish brown color which masks the violet color of the cold bead. *Wet test*—Fuse a suitable quantity of thoroughly calcined paper ash with 2 g. of potassium bisulphate, dissolve in cold water acidified with a little sulphuric acid, filter or decant, and add a few drops of hydrogen peroxide solution; in presence of titanium there immediately forms an orange-yellow color varying in intensity with the amount of titanium present; the test is sensitive to 0.01 g. of titanium oxide per 1000 cc. The peroxide test can be used for the colorimetric quantitative determination of titanium (the technic of the test is described in detail) with an accuracy sufficient for all ordinary purposes in the paper industry—A.P.-C.

Determination of Moisture in Wood Chips, Sawdust, and Pulp. A. J. Bailey. Ind. Eng. Chem., Anal. Ed. 9: 568-569 (Dec., 1937).—A method of determining the moisture in wood and pulp by distilling with tetrachloroethylene substituted for toluene is proposed. Common apparatus suffices, only a slight modification of the standard equipment being necessary, while the simplicity of the technic of the determination lends itself to routine work. The accuracy and precision of the method are nearly identical with those of the toluene method, while the time is reduced and the fire hazard is completely eliminated.—A.P.-C.

Modified Distillation Method for Moisture. H. N. Calderwood and R. J. Piechowski. Ind. Eng. Chem., Anal. Ed. 9: 520-521 (Nov., 1937).—In the distillation method for determining moisture, the introduction of a very small quantity of ethanol removes water adhering to the inner wall of the condenser tube, thus increasing the accuracy of the method. The ethanol should be added only after dehydration of the sample is complete. Ethanol should not be used as an indicator to show when dehydration of the sample is complete. Rates and periods of boiling are specified, which will give complete dehydration of the sample. Boiling must be uninterrupted throughout the analysis. The experimental work described was restricted to the Dean-Stark method, using xylene as the immiscible liquid. —A.P.-C.

Obituary

Richard C. Lewis

Richard C. Lewis, 42, sales engineer of Farrel-Birmingham Company, Inc., Ansonia, Conn., was killed in the accident to the United Airlines plane which crashed May 24, 1938, just before reaching its destination, the Cleveland airport.

At the time of his death Mr. Lewis was manager of the rolling mill sales division of the Farrel Birmingham Company in charge of sales of rolling mill equipment and roll grinding machines. Previously he had been connected with the engineering department as division engineer in charge of engineering of rolling mills, metal working machinery, roll grinders, sugar machinery and other heavy equipment. He had had engineering and sales experience on practically all products of the company and had been granted a number of patents for mechanical devices he had invented.

RICHARD C. LEWIS

Mr. Lewis was well known in the paper industry as an experienced and capable engineer with a thorough knowledge of the design and operation of roll grinding machines. He was highly esteemed for his personal qualities as well as for his professional ability by all of his associates and his many friends in the trade, and his passing is deeply regretted.

Mr. Lewis was born in Ansonia, Conn., obtained his education in the Ansonia public schools and was graduated from Worcester Polytechnic Institute in 1919, immediately after which he entered the employ of the Farrel Foundry & Machine Company as a draftsman.

His college career was interrupted during the World War when he entered the aviation corps in April, 1918. He was commissioned as a Second Lieutenant and served as a pilot and flying instructor in aviation training camps in Georgia and Louisiana until after the Armistice. He was enthusiastic about flying and usually used the airlines on his frequent business trips.

Mr. Lewis was a member of two technical and engineering societies—The American Society of Mechanical Engineers and the American Society for Metals. Fraternally he was affiliated with Theta Chi Fraternity, George Washington Lodge, F. & A. M., and Naugatuck Lodge, I.O.O.F. He was a member of William H. Gordon Post, American Legion, and of Christ Episcopal Church of Ansonia.

He is survived by his wife, one son, father and sister.

Funeral services were held at Christ Episcopal Church May 28th, with interment at Pine Grove Cemetery, Ansonia.

William S. Wilcox

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 31, 1938.—It was with deep regret that the news of the sudden death of William S. Wilcox, president of Wilcox-Walter-Furlong, 17 South 6th street, was received. While playing golf with executives of the paper houses here at the Typothetae Golf Tournament on the Llanerch golf course on Monday last, Mr. Wilcox was stricken with a fatal heart attack. He was 65 years of age and lives at 250 S. 18th street.

It is doubtful if any individual, catering to the paper industry, had a wider circle of close, intimate friends than Mr. Wilcox. Since 1922, when he established the business known as Wilcox-Walter-Furlong, he has been prominent in the activities of the local Paper Trade Association, and recently took a very active interest in the National Paper Trade Association.

Hundreds of friends and associates among whom was Arthur H. Chamberlain, executive secretary of the National Paper Trade Association, attended the funeral. Interment was in Woodlawn Cemetery, Westchester County, New York.

Robert E. Rudd

Robert E. Rudd, president and founder of the Rochester Paper Company, Rochester, Mich., died May 23, following a sudden heart attack.

Mr. Rudd, who had many years of experience in the blotting paper business with the Standard Paper Manufacturing Company, Richmond, Va., founded the Rochester Paper Company in 1926.

The operation of the company will continue as heretofore, with Paul G. Cook in charge of sales and Samuel J. Fortune superintendent of manufacturing operations.

Fred J. Libbing

Fred J. Libbing, 58, one of the founders of the Buckeye Paper Company, general paper merchants, of Toledo, O., died May 20 after a year's illness. He was born in Sturgis, Mich. and came to Toledo in 1900.

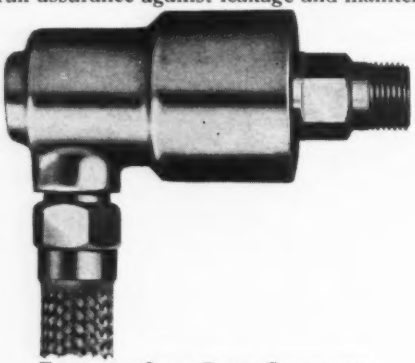
Mr. Libbing, with the late George J. Merickel, organized the Buckeye Paper Company in 1911. Soon after the company celebrated its 25th anniversary in 1936, he retired from active business. For the past year he was associated with the Toledo Merchandise Company, with which he was connected before establishing the paper company.

Mr. Libbing was a member of St. Paul's Lutheran Church, Rubicon lodge, F. & A. M., and the Toledo lodge of Elks. Surviving are his widow, a son, three sisters and two brothers.

New Rotary Seal Union

By incorporating a hollow shaft supported by ball bearings, a rotary seal and a length of flexible metal hose in one compact assembly, the Rotary Seal Company, 809 West Madison Street, Chicago, Ill.; has recently brought out the new Rotary Seal Union. This device provides a simple, efficient and dependable method of furnishing a leakproof connection for any liquid or gas, between a stationary delivery or receiving line and a revolving roll, cylinder or a similar member.

The two precision ball bearings, lubricated and sealed for life, afford a rotary joint with the least amount of friction. A rotary seal of the same type used so successfully in many different type of applications to seal gases and liquids under pressure, provides full assurance against leakage and maintenance.



FURNISHES LEAK PROOF CONNECTION

These parts, mounted in a cast brass housing and connected to the stationary pipe line by the length of flexible metal hose, are well capable of compensating for any mis-alignment which may be present as well as any angular or lateral movement of the roll. Materials for each part have been carefully selected so as to provide a union which will give years of satisfactory, uninterrupted service.

All Rotary Seal Unions, made in sizes for ½ to 2½ inches standard pipe sizes besides being guaranteed against defective material and workmanship, carry a one year maintenance-free guarantee. Literature covering the construction and operation of the Rotary Seal Union as well as engineering service in working out the application of it to any particular type of equipment will gladly be furnished by the manufacturer.

Johnson With Crocker-McElwain

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, May 31, 1938—The Crocker-McElwain Manufacturing Co. announced today that Frank A. Johnson, for the past 11 years general superintendent of the Sherman Paper company of Watertown, N. Y., has now assumed a similar position with the local company.

Mr. Johnson started his career in paper making with the old Norman Division of the American Writing Paper company twenty-five years ago. He then went with the King Paper company in Kalamazoo, Mich., as assistant general superintendent and later became superintendent. Mr. Johnson remained with the King Paper company, 12 years, going next to the Sherman company from which connection he comes to Holyoke. He will bring his family to Holyoke in the very near future.

Paper Directory of Great Britain

The Directory of Paper Makers of Great Britain and Ireland for 1938 has just been issued by Marchant, Singer & Co., 15, Nichalos Lane, London E. C. 4, England. This publication has been thoroughly and authentically revised and brought up to date in all its various sections—many new additions have been made in the trade designations, also numerous withdrawals and transfers of names in both actual watermarks and trade names have been made which makes the book of great value to printers and stationers and paper buyers generally.

Of particular interest is the special article "The Past Year in the Paper Trade", reviewing the position of the paper trade, important events concerning mills, also tabulated import duties. Reference to the directory is simple and quick, no matter how many references have to be made it never becomes a labor. Colored manilla index tabs are placed between all the more important sections, giving instant reference.

In addition to full details and particulars of the paper mills, etc., alphabetical lists will be found of the principal rag merchants, paper stock dealers, waste paper merchants and china clay producers and merchants and new features include a list of members of the paper exporters' section of the London Chamber of Commerce—a list of all the paper and allied trades associations with names and addresses of the secretaries.

Moyer & Pratt Make Improvements

[FROM OUR REGULAR CORRESPONDENT]

LYONSDALE, N. Y., May 31, 1938.—Improvements are under way at the plant of Moyer & Pratt, Inc., which will require several months for completion. A number of new dams are to be constructed which will be from 55 to 60 feet long. Construction work is to be started immediately and the Wright Construction Company has been awarded the contract. The cost is estimated at several thousand dollars and a large force of men will be employed on the project. It is expected that the work will be completed early in the fall.

To Try Dexter Suit June 6

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., May 31, 1938.—The suit to determine ownership of the capital stock of the Dexter Sulphite, Pulp and Paper Company, to declare invalid the voting trust agreement under which the concern is now being operated and to compel an accounting of those in charge, is scheduled to be tried here on June 6. The action was brought against Bernard A. Gray, president, and others by Mrs. Florence E. Campbell and Mrs. Alice M. Campbell. The latter seek to have the court award them the stock shares held by their husbands.

Bayless Plant In Operation

The item regarding the Bayless Pulp and Paper Corporation at Austin, Pa., in the issue of the PAPER TRADE JOURNAL of April 28, was misleading, according to a representative of the company. The plant has not been closed permanently. It was, however, shut down several days for repairs. New specialties have been added to the line and improvements have been made to better the quality of the regular line of paper made by the mill.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports, of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING MAY 28, 1938

SUMMARY

Cigarette paper .....2,053 cs.
Wall paper .....19 bxs., 14 cs.
Paper hangings .....4 bls.
Newsprint .....2,057 rolls
Printing paper .....219 rolls, 68 cs.
Wrapping paper .....193 bls. 298 rolls, 2 cs.
Packing paper .....2 cs.
Drawing paper .....72 cs.
Filter paper .....38 cs.
Filter compound .....50 bls.
Filter mass .....1 cs.
Surface coated paper .....5 cs.
Metal covered paper .....4 cs.
Basic paper .....9 cs.
Photo paper .....2 cs.
Buff paper .....8 bls.
Decalcomania paper .....5 cs. (duplex)
Decalcomanias .....19 cs.
Transfer pictures .....4 cs.
Tissue paper .....7 bbls., 27 cs.
Writing paper .....1 cs.
Tracing cloth .....18 cs.
Straw paper .....13 bls.
Paper tubes .....134 cs.
Cardboard .....14 cs.
Miscellaneous paper .....313 bls., 97 cs.

CIGARETTE PAPER

Champagne Paper Corp., *Pr. Roosevelt,* Havre, 765 cs.
De Manduit Paper Corp., *Floride,* Havre, 2 cs.
Braunstein Freres, Inc., *Floride,* Havre, 37 cs.
Champagne Paper Corp., *Paris,* Havre, 662 cs.
De Manduit Paper Corp., *Paris,* Havre, 2 cs.
De Manduit Paper Corp., *Washington,* Havre, 229 cs.
R. J. Reynolds Tobacco Co., *Washington,* Havre, 78 cs.
Champagne Paper Corp., *West Cusseta,* Havre, 278 cs.

WALL PAPER

S. K. Lonegren, *Gripsholm,* Gothenburg, 19 bxs.
——, *Bremen,* Bremen, 2 cs.
——, *Washington,* Havre, 12 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Merchant,* London, 4 bls.

NEWSPRINT

H. G. Craig Co. Inc., *Newscarrier,* Donnacona, 345 rolls.
N. Y. Evening Journal, *Pr. Roosevelt,* Hamburg, 214 rolls.
H. G. Craig Co. Inc., *Donpaco,* Donnacona, 314 rolls.
International Paper Co., *G.T.D.,* Gatineau, 326 rolls.
Parsons & Whittemore, Inc., *Nordvard,* Sundsvall, 59 rolls.
Wilkinson Bros. & Co. Inc., *Gripsholm,* Gothenburg, 58 rolls.
N. Y. Evening Journal, *Washington,* Hamburg, 178 rolls.
Perkins Goodwin & Co., *New York,* Hamburg, 563 rolls.

PRINTING PAPER

Japan Paper Co., *Pr. Roosevelt,* Havre, 7 cs.
R. J. Saunders, *Queen Mary,* Southampton, 7 cs.
F. C. Strype, *Volendam,* Rotterdam, 55 rolls, 26 cs.
L. A. Consmiller, *Bremen,* Bremen, 25 cs.
Steiner Paper Corp., *Bremen,* Bremen, 3 cs.
Dingelstedt & Co., *Bremen,* Bremen, 62 rolls.
Jay Madden Corp., *Washington,* Hamburg, 102 rolls.

WRAPPING PAPER

M. M. Cohen, *Pr. Roosevelt,* Hamburg, 4 bls., 192 rolls.
R. McBratney Co., *American Shipper,* Belfast, 2 cs.
——, *Gripsholm,* Gothenburg, 106 rolls.
Lunham & Reeve, Inc., *Gripsholm,* Gothenburg, 189 bls.

PACKING PAPER

——, *Black Tern,* Rotterdam, 2 cs.

DRAWING PAPER

H. Reeve Angel & Co. Inc., *American Merchant,* London, 2 cs.
Meadows Wye & Co., *Bremen,* Bremen, 1 cs.
Keuffel & Esser Co., *Washington,* Hamburg, 68 cs.
Schenker & Co., *New York,* Hamburg, 1 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *Georgic,* Southampton, 16 cs.
H. Reeve Angel & Co., Inc., *American Merchant,* London, 11 cs.
C. Schleicher & Schull Co. Inc., *New York,* Hamburg, 11 cs.

FILTER COMPOUND

A. Giese & Son, *New York,* Hamburg, 50 bls.

FILTER MASS

A. Giese & Son, *New York,* Hamburg, 1 cs.

SURFACE COATED PAPER

Hensel Bruckman & Lorbacher, *New York,* Hamburg, 5 cs.

METAL COVERED PAPER

K. Pauli Co., *New York,* Hamburg, 4 cs.

BASIC PAPER

Globe Shipping Co., *Bremen,* Bremen, 9 cs.

PHOTO PAPER

Medo Photo-Supply Co., *Scythia,* Liverpool, 2 cs.

BUFF PAPER

Nestles Food Products, Inc., *Scythia,* Liverpool, 8 bls.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Scythia,* Liverpool, 5 cs. (duplex)

DECALCOMANIAS

Sellers Transportation Co., *Bremen,* Bremen, 7 cs.
Sellers Transportation Co., *New York,* Hamburg, 12 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Bremen,* Bremen, 4 cs.

TISSUE PAPER

Jay Madden Corp., *Pr. Roosevelt,* Hamburg, 7 bbls.
W. J. Byrnes & Co., *Queen Mary,* Southampton, 1 cs.
Van Oppen & Co., *Excalibur,* Genoa, 26 cs.

WRITING PAPER

R. H. Macy & Co., *Pr. Roosevelt,* Havre, 1 cs.

TRACING CLOTH

C. Bruning & Co., *Bremen,* Bremen, 18 cs.

STRAW PAPER

American Express Co., *Washington,* Hamburg, 13 bls.

PAPER TUBES

——, *New York,* Hamburg, 134 cs.

CARD BOARD

Metropolitan Importing & Manfg. Co., *Washington,* Hamburg, 14 cs.

MISCELLANEOUS PAPER

American Express Co., *Floride,* Havre, 12 cs.
Coty Processing Co., *Floride,* Havre, 10 cs.

Phoenix Shipping Co., *American Merchant,* London, 3 cs.
American Express Co., *American Merchant,* London, 10 cs.
National City Bank, *Kansai Maru,* Yokohama, 6 cs.
T. D. Downing & Co., *Paris,* Havre, 8 cs.
Kramer & Co., *Gripsholm,* Gothenburg, 313 bls.
Japan Paper Co., *Yamazato Maru,* Kobe, 36 cs.
Heemsoth Kerner Corp., *New York,* Hamburg, 12 cs.

RAGS, BAGGINGS, ETC.

R. Blank, *Rio Verde,* Alexandria, 264 bls. rags.
Keene, Inc., *Rio Verde,* Alexandria, 77 bls. bagging.
E. J. Keller Co. Inc., *Rio Verde,* ———, 96 bls. bagging.
Chase National Bank, *Kalinin,* Odessa, 1362 bls. linen rags and waste.
Chase National Bank, *Kalinin,* Odessa, 649 bls. linen rags, 441 bls. linen cuttings, 75 bls. cotton waste.
Banco Coml. Italiane Trust Co., *Kalinin,* Odessa, 113 bls. waste.
W. Steck & Co., *Olga S.,* Antwerp, 190 bls. flax waste.
American Express Co., *Olga S.,* Antwerp, 151 bls. rags.
D. Stern, *Olga S.,* London, 122 bls. rags.
Manufacturers Trust Co., *Scythia,* Liverpool, 4 bls. rags.
Chase National Bank, *Kansai Maru,* Osaka, 24 bls. rags.
E. J. Keller Co. Inc., *Black Eagle,* ———, 140 bls. bagging.
J. Levy & Son, *Orizaba,* Havana, 12 bls. rags.
Jaffe Products, Inc., *Orizaba,* Havana, 204 bls. rags.
Bank of N. Y. Trust Co., *Mahout,* Calcutta, 80 bls. cotton cuttings.
E. J. Keller Co. Inc., *West Cusseta,* ———, 18 bls. rags.
Banco Coml. Italiane Trust Co., *Washington,* Hamburg, 620 bls. rags.
Delia Waste Products Corp., *Yamazato Maru,* Kobe, 25 bls. rags.

GLUE STOCK, ETC.

———, *American Shipper,* Liverpool, 1160 bags hide cuttings.
———, *New York,* Hamburg, 50 bags bone glue.

OLD ROPE

E. J. Keller Co. Inc., *Black Tern,* ———, 46 coils.
W. Steck & Co., *Statendam,* Rotterdam, 43 coils.

WOOD PULP

Bulkley Dunton Pulp Co. Inc., *Nordvard,* ———, 3,200 bls. sulphite, 640 tons.
Bulkley Dunton Pulp Co. Inc., *Nordvard,* ———, 3,900 bls. sulphate, 776 tons.
Brown Bros., Harriman & Co. Inc., *Nordvard,* Hernosand, 120 bls. sulphate, 20 tons.
Brown Bros., Harriman & Co. Inc., *Nordvard,* Hernosand, 3,177 bls. sulphite, 509 tons.
———, *Nordvard,* Hernosand, 4,692 bls. sulphate, 792 tons.
Johaneson Wales & Sparre, Inc., *Nordvard,* Sundsvall, 600 bls. kraft sulphate, 100 tons.
Johaneson Wales & Sparre, Inc., *Nordvard,* Sundsvall, 2,135 bls. sulphite, 627 tons.
E. M. Sergeant Pulp & Chemical Co., *Gripsholm,* Gothenburg, 150 bls. kraft soda pulp.
Bank of N. Y. Trust Co., *New York,* Hamburg, 140 bls. wood pulp, 28 tons.

WOOD PULP BOARDS

H. Fuchs & Son, *Gripsholm,* Gothenburg, 86 crates.
———, *New York,* Hamburg, 26 rolls.

ALBANY IMPORTS

WEEK ENDING MAY 28, 1938

———, *Consul Corfitzon,* Ornskoldsvik, 1,050 bdls. 4 bxs wall board.
Pagel Horton & Co. Inc., *Consul Corfitzon,* Ornskoldsvik, 600 bls. sulphate.
———, *Consul Corfitzon,* Ornskoldsvik, 2,310 bls. chemical pulp.
———, *Consul Corfitzon,* Hernosand, 2,574 bls. kraft pulp 429 tons.
———, *Consul Corfitzon,* Iggesund, 2,500 bls. sulphite.
———, *Consul Corfitzon,* Iggesund, 1,120 bls. sulphite.
Tradesmans Natl. Bank Trust Co., *Consul Corfitzon,* Norrsundet, 1,125 bls. sulphate 258 tons.
Pagel Horton & Co. Inc., *Consul Corfitzon,* Gefle, 15,000 bls. sulphite, 1,725 tons.
Pagel Horton & Co. Inc., *Consul Corfitzon,* Gefle, 500 bls. sulphate, 100 tons.
———, *Consul Corfitzon,* Gefle, 500 bls. sulphite, 100 tons.

BOSTON IMPORTS

WEEK ENDING MAY 28, 1938

D. C. Andrews & Co., *Black Tern,* Antwerp, 23 bls. cotton waste.
International Purchasing Co., *Black Tern,* Antwerp, 46 cls old rope.
Gottesman & Co. Inc., *Ragnhildsholm,* Sweden, 425 bls. unbleached sulphite.
Price & Pierce, Ltd., *Mormactide,* ———, 120 bls. bleached sulphite.
Price & Pierce, Ltd., *Ragnhildsholm,* ———, 1,650 bls. unbleached sulphite.
Price & Pierce, Ltd., *Ragnhildsholm,* ———, 1,500 bls. unbleached sulphate.

HOUSTON IMPORTS

WEEK ENDING MAY 28, 1938

———, *Vigrid, Gdynia,* 98 bls. bagging, 183 bls. rags.

MONTREAL IMPORTS

WEEK ENDING MAY 28, 1938

Gottesman & Co. Inc., *Tyrifjord,* Sweden, 4,800 bls. sulphate.
Gottesman & Co. Inc., *Tyrifjord,* Sweden, 4,635 bls. unbleached sulphite.

Micromax Frequency Recorders

A new 20-page catalog on "Micromax Frequency Recorders and Indicators" has just been issued by the Leeds & Northrup Company, 4934 Stenton Avenue, Philadelphia, Pa. Now that synchronous clocks and synchronous machinery are used so generally, frequency measurement is increasingly important not only to public utilities, but to industrial plants that generate their own power, and even to those that buy it. The subject, however, is one on which little literature has been published. In this booklet, therefore, the description of instruments is prefaced with a discussion of considerations responsible for the increasing use of equipment for frequency measurement and for frequency-load control. Illustrations show modern installations in steam, hydro and diesel plants, large and small, as well as in load dispatchers' offices and in laboratories.

Fort William Mills Less Active

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 1, 1938.—The eight paper mills in the Fort William-Port Arthur district operated at 52 per cent of capacity in March, compared with 53 per cent in the preceding month, and 74 per cent in March 1937, according to a report from the office of the American Consulate, Fort William and Port Arthur. While part of the decrease was due to one or more of the mills slowing down for repairs, most of it was the direct result of over-production in the past months.

Lynd-Redmond Nuptials

KALAMAZOO, Mich., May 31, 1938.—Miss Helen Redmond, daughter of the late Michael J. Redmond, and Lloyd J. Lynd were married in St. Augustine Church, Saturday, May 28, 1938. Three hundred and fifty guests witnessed the ceremony and a reception and wedding breakfast followed at the Columbia Hotel.

After a wedding trip through Wisconsin and Minnesota they will reside in Kalamazoo. Mr. Lynd is traveling representative for the Dilts Machine Works, Inc., of Fulton, N. Y.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, June 1, 1938.

Sales volume in the wholesale paper market is reported to be little changed for the current week from the moderate level of activity of last week. One large manufacturer of a varied line, with an extensive warehouse distribution, reports that its production is around 70 per cent and distribution well balanced against this output. In comparison with other mills producing fewer grades of paper and with a more limited market for their products, this is probably too high a figure to apply as the average production ratio of several hundred of mills is well below this level. With few exceptions, the wholesale paper trade continues to hold up well and for the current week including a holiday, the distribution of all grades of paper averages higher than most consumer goods, while in production the paper industry continues to lead all major industries. Prices, in general, are unchanged.

The demand for newsprint, although substantially below that of last year, continues at a moderate level and prices hold firm.

The medium grades of sulphite papers are in moderate demand. Little change in ground wood papers is reported. The tissue paper market continues to reflect a better tone but no change is reported in either demand or prices for the week. The demand for kraft papers continues to hold up well to maintain the small, steady improvement which has continued from the first of the year. Prices of all grades of fine and coarse papers remain relatively firm and unchanged.

Chemical Pulp

The chemical pulp market reports no change in either demand or prices for this week. There is a somewhat better tone to the market and while some talk is heard about lower prices on Canadian and domestic bleached sulphite pulp, no changes from prevailing market prices have been announced.

Mechanical Pulp

The demand for mechanical pulp continues light, with no change in either demand or prices reported for the current week.

Old Rope and Bagging

The old rope market reports business as very light. The prices of domestic and foreign manila rope are lower for the week. Old bagging continues to be in little demand and prices remain unchanged at prevailing market quotations, with little business transacted below the market.

Rags

The rag market reports business as light with no change in mill demand for new and old domestic rags. The improvement in demand for roofing rags which began a few weeks ago continues but no change from prevailing market prices are reported. The foreign rag market is inactive. Quotations are nominal.

Waste Paper

Improvement in the demand for white envelopes is reported this week, but no change in prices have occurred, with the exception of the prices on old kraft machine stock, in compressed bales, which are lower for the week.

Twine

The demand for twine is reported fair for some grades of soft and hard fiber twines. Prices continue unchanged and conform to prevailing market quotations.

To Reduce Duty on Newsprint

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 1, 1938—The draft of a bill providing for a reduction of the import duty on newsprint has recently been submitted to the Volkaraad by the Netherlands Indian Government, according to a report from the office of the American Trade Commissioner, Batavia. The bill provides that the present basic rate of 12 per cent on newsprint in rolls or in sheets be reduced to 6 per cent, which, including the existing surtax of 25 per cent on import duties, will make the rate 7½ per cent. In its explanatory note the government stated that although a general revision of the Netherlands Indian Tariffs is now under consideration, it is considered desirable to aid the local newspaper industry as soon as possible by effecting this downward revision immediately.

Du Pont Loses Cellophane Suit

According to press reports from Washington, D. C., E. I. du Pont de Nemours & Co. failed in the Supreme Court on May 23 in an effort to prevent Waxed Products Company, Inc., of New York, from using the word "cellophane" to describe a transparent cellulose product.

The high court refused to pass upon a decision of the Second Circuit Court of Appeals that the du Pont competitor could use the term "cellophane in its advertisements provided it shall prefix the maker's name as a possessive."

Du Pont contended use of the trade-marked term by others was a violation of trade-mark rights.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, June 1, 1938.

BLANC FIXE—The demand for blanc fixe is steady at a moderate level and prices are unchanged at prevailing quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—The quotations on bleaching powder are unchanged at prevailing prices. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein continues fair. Prices are slightly higher for the current week. Domestic ground casein is quoted at from 7 to 8 cents per pound; domestic finely ground at from 8½ to 9 cents per pound. All prices in bags, car lot quantities.

CAUSTIC SODA—The quotations on caustic soda continue unchanged at prevailing prices. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—The demand for china clay continues at a moderate level. Prices are unchanged. Imported clay is offered at from $14.50 to $25 per ton, ship side. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—Quotations on chlorine are unchanged and conform to prevailing prices. Chlorine is quoted at $2.15 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—The demand for rosin is reported as fair. Prices of some grades are lower for the week. "G" gum rosin is quoted at $4.15; wood rosin at $4.25 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.50 per 100 pounds, f.o.b., shipping point.

SALT CAKE—The demand for salt cake is reported at a moderate level. Quotations range from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—The quotations on soda ash are unchanged at prevailing prices. Prices on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are unchanged for the week. Globe pearl is quoted at $2.65 per 100 pounds, in bags, and at $2.90 in barrels. Special paper starch is quoted at $2.75 per 100 pounds, in bags, and at $3.00 in barrels. All prices in car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—The prices of sulphate of alumina are lower for the current week. The commercial grades are quoted at $1.15 per 100 pounds; iron free at $1.30 per 100 pounds, in barrels, car lot quantities, f.o.b., works.

SULPHUR—The prices on sulphur continue unchanged at prevailing quotations. Annual contracts are quoted at $18 per long ton, f.o.b., cars at mines. Spot and nearby car lots are offered at $21 per ton.

TALC—Quotations on talc continue at prevailing prices. Domestic talc is quoted at from $15 to $18 per ton, Eastern mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$5.12½	@	$5.37½
Superstandard	5.00	@	—
Northern Standard Wrapping	4.50	@	—
Standard Wrapping	4.00	@	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.80	@	—
Bleached	2.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	$8.25	@	$10.25
No. 2 Jute	7.50	@	9.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Boards, per ton—			
News	$27.50	@	$30.00
Chip	27.50	@	30.00
Sgl. Mla. Lt. Chip.	42.50	@	45.00
Jute Lined Chip	45.00	@	—
White Pat. Coated	57.50	@	—
Kraft Liners	52.50	@	—
Binders Boards	75.00	@	80.00

The following are representative of distributors' resale prices:—

Rag Content Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$41.40@$48.50	$42.55@$50.00
100% Rag	32.80@ 38.50	33.95@ 39.75
85% Rag	31.65	@37.25
75% Rag	24.75@ 29.00	25.90@ 30.50
65% Rag	21.65@ 26.25	22.80@ 27.75
50% Rag	18.70@ 22.75	19.90@ 24.25
45% Rag	15.80@ 19.25	16.95@ 20.75

Regular Colors @ $1.50 cwt. extra.
Heavy Colors @ $3.00 cwt. extra

Sulphite Bonds and Ledgers—
White, Assorted Items,
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$8.80@$10.75	$9.95@$12.00
No. 2	7.90@ 9.50	9.05@ 11.00
No. 4	7.00@ 8.50	8.20@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—
White, Cased Paper,
Delivered in Zone 1:

No. 1 Glossy Coated	$12.15	@$14.25
No. 2 Glossy Coated	10.55@	12.25
No. 3 Glossy Coated	9.35@	11.00
No. 4 Glossy Coated	8.80@	10.50
No. 1 Antique (watermarked)	8.80@	10.50
No. 2 Offset	8.05@	9.50
A Grade E. F.	7.90@	9.50
A Grade S. & S. C.	8.15@	9.75
B Grade E. F.	7.30@	8.75
B Grade S. & S. C.	7.55@	9.00
C Grade E. F.	7.00@	8.50
C Grade S. & S. C.	7.25@	8.75
D Grade E. F.	6.75@	8.25
D Grade S. & S. C.	7.00@	8.50

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	27.00	@	30.00
Dry	27.00	@	30.00

(Delivered)

No. 1 Domestic and Canadian	29.00	@	33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.50	@	3.50
Prime Qualities—			
Easy-Bleaching Sulphite	2.25	@	2.50
Strong Unbleached Sulphite	2.00	@	2.25

(On Dock, Atlantic Ports)

Kraft Bleached	2.75	@	3.25
Kraft Light & Strong	2.00	@	2.25
Kraft No. 1	1.85	@	2.15
Kraft No. 2	1.75	@	1.90

(F.o.b. Pulp Mill)

Kraft Domestic	2.00	@	2.35

(Delivered)

Soda Bleached	2.70	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.25	@	6.50
Silesias No. 1	5.00	@	5.25
New Unbleached	6.25	@	6.50
Blue Overall	4.00	@	4.50
Fancy	2.25	@	2.50
Washables	1.80	@	1.90
Mixed Khaki Cuttings	3.60	@	3.75
O. D. Khaki Cuttings	4.35	@	4.50

Old Rags

White, No. 1—			
Repacked	3.40	@	3.50
Miscellaneous	2.75	@	3.00
White, No. 2—			
Repacked	2.10	@	2.25
Miscellaneous	1.70	@	1.80
Thirds and Blues—			
Repacked	1.40	@	1.50
Miscellaneous	1.25	@	1.30
Roofing Rags—			
No. 1	1.00	@	1.15
No. 2	.75	@	.80
No. 3 (bagging)	.65	@	.70
No. 4	.65	@	.70
No. 5A	.65	@	.70

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.10
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	—

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PAPER MAKERS IMPORTING CO. INC. BOSTON, PENNSYLVANIA, U.S.A.

COATING **FILLING**

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THAT ~~TELEGRAPH~~ *QUALITY of PRODUCT*

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KRAFT WRAPPING AND KRAFT ENVELOPE.
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Oil and water resistant belts that will save you money in the long run. ¶ Since 1876 we have been supplying the industry direct from our own tanneries.

Write Barnes for better belts.

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No. 4 White Linens	2.25	@	3.25
No. 1 White Cotton	4.25	@	4.75
No. 2 White Cotton	3.25	@	3.75
No. 3 White Cotton	2.50	@	3.00
No. 4 White Cotton	1.90	@	2.20
Extra Light Prints	2.00	@	2.40
Ord. Light Prints	1.75	@	2.15
Med. Light Prints	1.55	@	1.95
Dutch Blue Cottons	2.25	@	2.50
French Blue Linens	3.00	@	—
Checks and Blues	2.00	@	—
Linsey Garments	1.90	@	2.00
Dark Cottons	1.50	@	1.60
Old Shopperies	1.30	@	1.45
New Shopperies	1.45	@	1.50
French Blues	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.25	@	2.35
Domestic	2.20	@	2.25
Wool Tares, light	1.50	@	1.75
Wool Tares, heavy	2.00	@	2.10
Bright Bagging	1.60	@	1.70
Manila Rope—			
Foreign	2.50	@	2.75
Domestic	2.75	@	2.90
Jute Threads	2.75	@	3.00
Sisal Strings	1.75	@	2.00
Mixed Strings	.60	@	.70

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.25	@	2.35
Ordinary Hard White No. 1	1.90	@	2.00
Soft White No. 1	1.80	@	2.20
Flat Stock—			
Stitchless	.70	@	.80
Overissue Mag	.60	@	.70
Solid Flat Book	.55	@	.60
Crumbled No. 1	.40	@	.45
Ledger Stock	.90	@	.95
New B. B. Chips	.15	@	.20
Manila—			
New Env. Cut	1.85	@	2.00
New Cuttings	1.50	@	1.60
Old Kraft Machine—			
Compressed bales	.60	@	.70
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue	.45	@	.50
Strictly Folded	.20	@	.25
No. 1 Mixed Paper	.05	@	.10

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.11	@	.13
White Hemp	.12	@	.14
Fine Polished—			
Fine India	.15	@	.17
Unpolished—			
Box	.08½	@	—
Paper Makers	.07½	@	.08½
Tube Rope	.09	@	.10
Wall Paper	.10	@	.11
Wrapping	.11	@	.13
Soft Fiber Rope	.09½	@	.11½
Cotton	.15	@	.20

(Hard Fiber)

Medium Java	.09	@	.10
Mex. Sisal	.08½	@	.09½
Manila	.18	@	.25
Domestic	2.25	@	2.50
Sisal Rope	1.65	@	1.85
Mixed Rope	.45	@	.50
Transmission Rope	1.50	@	1.75
Soft Jute Ropes	1.85	@	2.00
Jute Carpet Threads	1.00	@	1.50
Gunny Bagging—			
Foreign	2.35	@	2.35
Domestic	1.85	@	1.90
Bleachery Burlap	3.25	@	3.75
Scrap Burlap—			
Foreign	1.65	@	1.80
Domestic	—	@	1.90
Scrap Sisal	1.25	@	1.50
Scrap Sisal for Shredding	1.75	@	1.90
Wool Tares, Heavy	1.60	@	1.70
New Burlap Cuttings	1.85	@	2.00
Aust. Wool Pouches	2.85	@	3.10
Heavy baling bagging	1.85	@	2.00
Paper Mill Bagging	1.00	@	1.15
No. 2 Bagging	.50	@	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.03	@	.03¼
New White No. 1	.06½	@	.06¾
New White No. 2	.05	@	.05½
New Light Flannelettes	.04¼	@	.04¾
Silesias No. 1	.04¼	@	.04¾
New Black Silesias	.03¾	@	.04
Silesias No. 1			
Soft Unbleached	.06¾	@	.07
Blue Cheviots	.05	@	.05¼
Fancy	.03	@	.03¼
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls	.04¾	@	.05
New Black, soft	.03¾	@	.04
Khaki Cuttings	.03¼	@	.03¾
O. D. Khaki	.04	@	.04½
Corduroy	.02¾	@	.03
New Canvas	.07¼	@	.07½
B.V.D. Cuttings	—	@	.06½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.73
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.21
Twos and Blues	1.75	@	2.00
Third and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	1.00	@	1.10
No. 2	.75	@	.85
No. 3	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.00	@	1.15
Dutch Blues	2.75	@	2.90
New Checks and Blues	2.85	@	3.00
Old Fustians	2.50	@	2.60
Old Linsey garments	1.75	@	1.90
New Silesias	6.00	@	6.50

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.05½	@	.06
New White, No. 2	.03½	@	.04
Light Silesias	.04½	@	.05
Silesias, No. 1	—	@	.04½
Black Silesias, soft	.03	@	.03½
New Unbleached	—	@	.06
Washable, No. 1	.01¾	@	.01½
Blue Overall	.04	@	.04½
Cottons—According to grades—			
Washable No. 2	.01	@	.01¾
New Blue	.01	@	.01¾
Fancy Percales	—	@	.02½
New Black Soft	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.	.03½	@	.04
No. 2 Mixed	.02	@	.02½
Corduroy	—	@	.02
New Canvas	.05	@	.05½
New Black Mixed	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	2.25	@	2.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.00	@	1.25
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1	—	@	.75
Domestic No. 1	—	@	.75
Domestic No. 2	.50	@	.65
Roofing Bagging	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.75
Domestic	1.50	@	1.75
Manila Rope	3.00	@	3.25
Sisal Rope	1.75	@	2.00
Mixed Rope	.75	@	1.00
Scrap—			
No. 1	—	@	1.25
No. 2	1.00	@	1.25
Wool Tares, heavy	3.25	@	3.50
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.35	@	2.40
No. 2 Hard White	2.00	@	2.10
No. 1 Soft White	2.00	@	2.10
No. 2 Soft White	1.40	@	1.50
No. 1 Mixed	.70	@	.75
Solid Ledger Stock	1.50	@	1.60
Ledger Stock, white	1.25	@	1.30
Ledger Stock, colored	.85	@	.90
No. 1 Books, heavy	.85	@	.90
Manila Cuttings	1.50	@	1.75
Print Manila	.45	@	.50
Container Manila	—	@	.40
Kraft Paper	.90	@	.95
No. 1 Mixed Paper	.25	@	.30
Straw Board Chip	.25	@	.30
Binders Board Chip	.25	@	.30
Corrugated Board	.50	@	.55
Overissue News	.55	@	.60
Old Newspapers	.30	@	.35

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.40
No. 1 Soft White	1.85	@	2.15
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.65	@	.75
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.55	@	.65
Manila Env. Cuttings	1.60	@	1.70
Manila Envelope Cuttings, extra quality	2.10	@	2.20
No. 1 Old Manila	.95	@	1.00
White Blank News	1.30	@	1.40
No. 1 Kraft	.90	@	—
Mixed Papers	—	@	.10
Print Manila	.45	@	.50
Container Manilas	.27½	@	—
Old Newspapers	.25	@	.32½
Paper Wool Strings	.70	@	.75
Overissue News	.45	@	.50
Box Board Chips	.20	@	.25
Corrugated Boxes	.27½	@	.30
Kraft corrugated boxes	.65	@	.75
Screenings wrappers	.45	@	.50

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.75	@	2.85

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.80	@	1.90
No. 1 Hard White	1.70	@	1.80
No. 1 Soft White	1.50	@	—
Ledger & Writings	.75	@	.80
Solid Books	.55	@	—
Blanks	.90	@	—
Krafts	.60	@	—
New Kraft Cuts	1.10	@	—
Manila Env. Cuts	Nominal		
Ex. No. 1 Manila	Nominal		
Print Manila	Nominal		
Overissue News	.35	@	—
Old Newspapers—			
No. 1 Folded News	.30	@	—
No. 1 Mixed Paper	.20	@	—
Roofing Stocks—			
No. 1	2.00	@	2.25
No. 2	1.85	@	2.00

TORONTO

Paper

Bonds and Ledgers

Delivered

No. 1 White	.36½	@	—
No. 1 Tints	.37½	@	—
No. 2 White	.26½	@	—
No. 2 Tints	.27½	@	—
No. 4 White	—	@	.1550
No. 4 Tints	16.50	@	—
No. 5 Bond—White	11.85	@	—
No. 5 Bond—Tints	12.85	@	—
No. 5 Bond—Golden Rod	13.35	@	—
No. 5 Ledger—White	.1185	@	—
No. 5 Ledger—Tints	.1285	@	—
No. 6 Bond—White	10.75	@	—
No. 6 Bond—Tints	11.25	@	—
No. 6 Bond—Golden Rod	12.75	@	—
No. 7 Bond—White	9.10	@	—
No. 7 Bond—Tints	9.60	@	—
No. 7 Bond—Golden Rod	11.10	@	—

Book—

No. 1 M. F.	7.35	@	—
No. 2 M. F.	6.85	@	—
No. 3 M. F.	5.60	@	—
No. 1 S. C.	7.60	@	—
No. 2 S. C.	7.10	@	—
No. 3 S. C.	6.10	@	6.35
No. 1 Coated Book and Litho	12.50	@	—
No. 2 Coated Book and Litho	11.00	@	—
No. 3 Coated Book and Litho	10.00	@	—
Coated tinted	13.50	@	—

Wrapping—delivered—

Rag Brown	4.85	@	5.55
White Wrap	4.00	@	—
"B" Manila	4.90	@	6.25
No. 1 Manila	5.50	@	7.00
Fiber	5.50	@	—
Kraft, No. 2	5.25	@	—

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)	$50.00	@	—
Sheets	69.50	@	—

Pulp

Ground wood	29.50	@	—
Unbleached Sulphite	54.00	@	—
Book (Class 1)	64.00	@	—
Writing (Class 2)	62.00	@	—
Select (Class 3)	63.00	@	—
Kraft	50.00	@	—
Soda	56.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.25	@	—
Soft White	2.15	@	—
White Blk. News	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.80	@	—
Light and Crumpled Book Stock	.75	@	—
Ledgers and Writings	1.10	@	—
Manilas—			
New Manila Cut	1.35	@	—
Printed Manilas	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.45	@	—
No. 1 Mixed Paper	.30	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.06½	@	.06¾
Fancy Shirt Cuttings	.02¼	@	.02½